

**OWNER:**  
 NEW AMERICAN DREAM, LTD  
 8702 ADAMS LANE, TEMPLE, TEXAS 76502  
 (254) 721-6179


**DEVELOPER:**  
 WALL DEVELOPMENT, LLC  
 8702 ADAMS LANE, TEMPLE, TEXAS 76502  
 (254) 721-6179

**REGISTERED PROFESSIONAL LAND SURVEYOR:**  
 COLLIER ENGINEERING AND DESIGN  
 13501 KATE FREEWAY, SUITE 1700, HOUSTON, TEXAS 77079  
 (281) 674-7580

**REGISTERED PROFESSIONAL ENGINEER:**  
 CLARK ASSOCIATES, PLLC  
 215 N. MAIN STREET, TEMPLE, TEXAS 76501  
 (254) 899-0899

STATE OF TEXAS  
 COUNTY OF BELL

I, THE UNDERSIGNED, A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, HEREBY CERTIFY THAT PROPER ENGINEERING CONSIDERATION HAS BEEN GIVEN THIS PLAT.

  
 MONTY L. CLARK  
 REGISTRATION NUMBER 90894

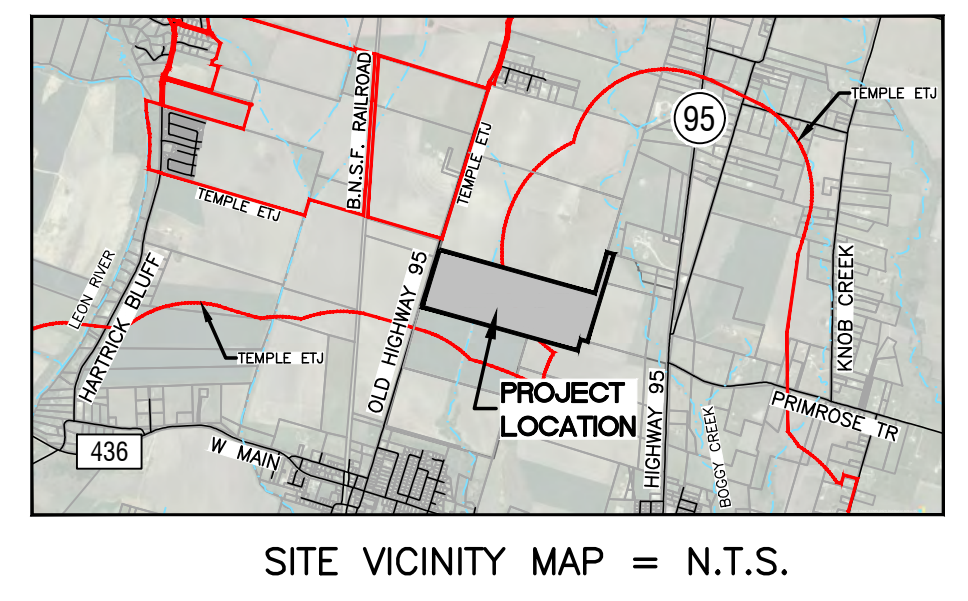
APPROVED FOR PREPARATION OF FINAL PLAT:

THIS PLAT HAS BEEN SUBMITTED TO AND CONSIDERED BY THE PLANNING AND ZONING COMMISSION OF THE CITY OF TEMPLE, TEXAS, AND IS HEREBY APPROVED BY SUCH COMMISSION. DATED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2022

CHAIRMAN, PLANNING AND ZONING COMMISSION

THIS PLAT HAS BEEN SUBMITTED TO AND CONSIDERED BY THE PLANNING AND ZONING COMMISSION OF THE CITY OF TEMPLE, TEXAS, AND IS HEREBY APPROVED BY SUCH COMMISSION. DATED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2022

SECRETARY, PLANNING AND ZONING COMMISSION



**GENERAL NOTES:**

- STORM DRAINAGE SHALL BE DESIGNED IN ACCORDANCE WITH THE CITY OF TEMPLE'S DRAINAGE ORDINANCE.
- THE HOA WILL OWN AND MAINTAIN ALL TRACTS FOR DRAINAGE AND DETENTION.
- TRACT "E" USE IS TO BE DETERMINED. THE HOA WILL OWN AND MAINTAIN.
- "NO PARKING" SIGNS TO BE INSTALLED ON EACH SIDE OF 24' ROADWAYS AND MAINTAINED.
- WATER SERVICE MAY BE PERMITTED WITHIN THE CITY OF TEMPLE CCN AND ETJ. WATER SERVICE BEYOND THE CITY CCN AND INTO LITTLE RIVER ACADEMY ETJ WILL REQUIRE FURTHER REVIEW AND APPROVAL.

STATE OF TEXAS  
 COUNTY OF BELL  
 NEW AMERICAN DREAM, LTD A TEXAS LIMITED COMPANY, BEING THE OWNER OF THE LAND SHOWN ON THIS PLAT AND DESIGNATED HEREIN AS COTTON BOTTOM ESTATES, A SUBDIVISION IN THE CITY OF TEMPLE ETJ, BELL COUNTY, TEXAS, AND WHOSE NAME IS SUBSCRIBED HERETO, HEREBY DEDICATE THE USE TO THE PUBLIC FOREVER ALL STREETS, ALLEYS, PARKS, WATERCOURSES, DRAINS, EASEMENTS, AND PUBLIC PLACES SHOWN HEREON WITHIN THE PLAT BOUNDARIES OF THIS SUBDIVISION.

JC WALL III - PARTNER  
 NEW AMERICAN DREAM, LTD

STATE OF TEXAS

THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON \_\_\_\_\_ BY JC WALL, III, A PARTNER OF NEW AMERICAN DREAM, LTD, A TEXAS LIMITED COMPANY.

NOTARY PUBLIC, STATE OF TEXAS

THIS PLAT HAS BEEN SUBMITTED TO AND CONSIDERED BY THE CITY OF COUNCIL OF THE CITY OF TEMPLE, TEXAS, AND IS HEREBY APPROVED BY SUCH COMMISSION. DATED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2022

CITY SECRETARY

BELL COUNTY  
 PUBLIC HEALTH DISTRICT CERTIFICATE

I, THE UNDERSIGNED, A REGISTERED SANITARIAN IN THE STATE OF TEXAS, HEREBY CERTIFY THAT THIS SUBDIVISION HAS BEEN REVIEWED FOR COMPLIANCE WITH APPLICABLE STATE AND COUNTY REGULATIONS GOVERNING ON-SITE SEWAGE FACILITIES AND IS HEREBY RECOMMEND FOR APPROVAL.

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

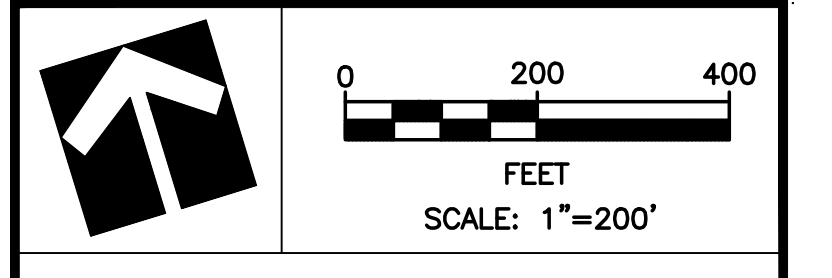
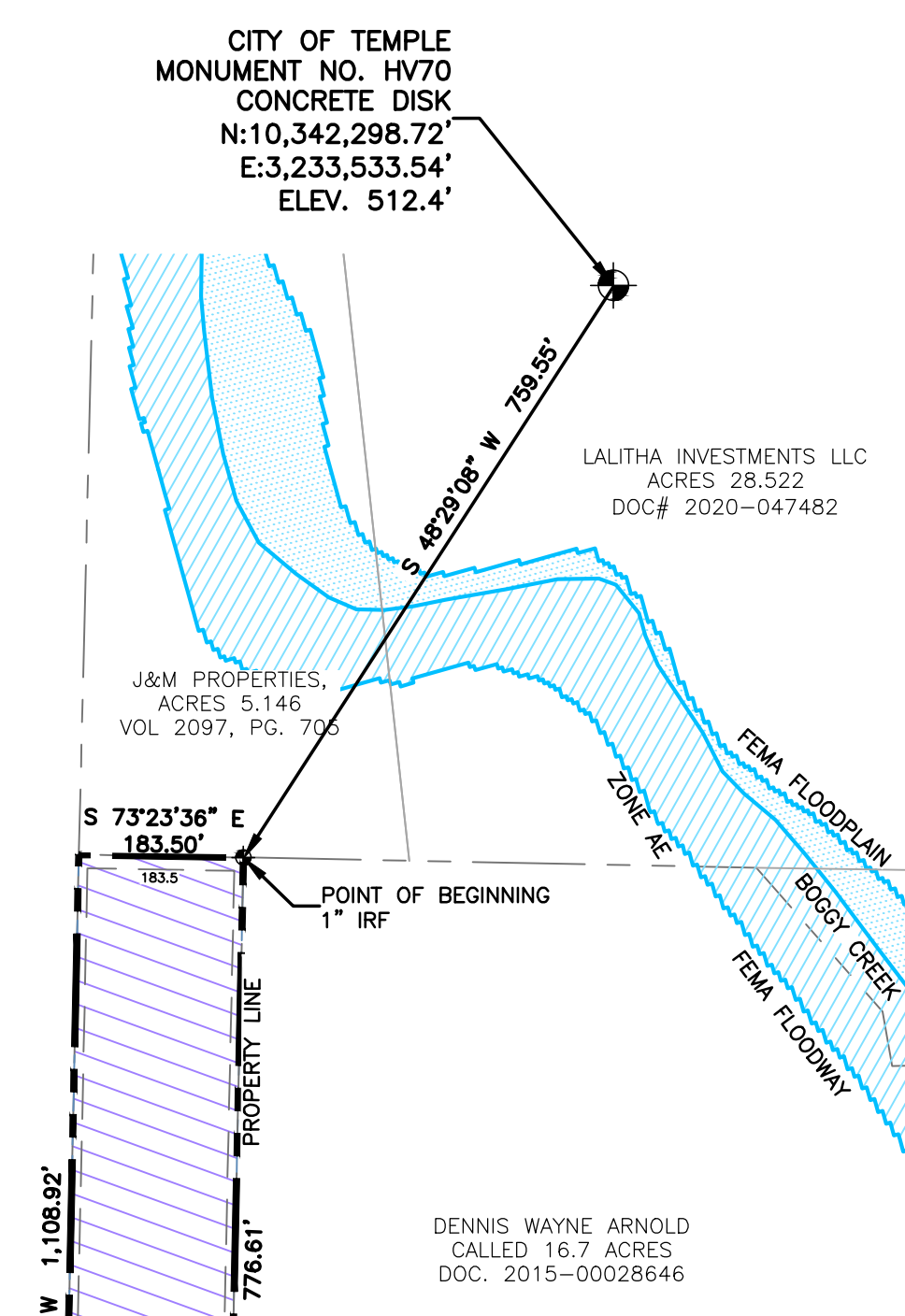
BELL COUNTY PUBLIC HEALTH DISTRICT

**FLOODPLAIN NOTES**

- BASED ON INFORMATION AVAILABLE FROM THE FEMA FIRM RATE MAP NUMBERED 48027C0365E, DATED SEPTEMBER 26, 2008, A PORTION OF THE PROPERTY IS LOCATED WITHIN ZONE "X" AREAS OF MINIMAL FLOOD HAZARD AND A PORTION OF THIS PROPERTY IS LOCATED WITHIN SHADED ZONE "A" AREAS OF SPECIAL FLOOD HAZARD.
- ALL FLOODPLAIN AREAS SHALL BE VERIFIED BY A REGISTERED PROFESSIONAL LAND SURVEYOR AND BE DISPLAYED ACCURATELY ON PLANS. ALL DEVELOPMENT IN THE FLOODPLAIN WILL BE SUBJECT TO A HYDRAULIC STUDY BY A LICENSED ENGINEER, SURVEYOR, OR ARCHITECT ALONG WITH AN ELEVATION CERTIFICATE. ADDITIONAL INFORMATION PERTINENT TO THESE PLANS MAY ALSO BE SUBMITTED TO BE REVIEWED. ALL DRAINAGE DEVELOPMENT SHALL MEET THE DRAINAGE DESIGN CRITERIA STATED IN THE BELL COUNTY ENGINEERS SUBDIVISION REGULATIONS SECTIONS 203.6-DRAINAGE AND TOPOGRAPHY, SECTION 302-STREETS AND DRAINAGE, SECTION 307-DRAINAGE

**SURVEY NOTES:**

- ACCORDING TO THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP FOR BELL COUNTY, TEXAS, MAP NUMBER 48027C0365E, PANEL 0365E, DATED SEPTEMBER 26, 2008, A PORTION OF THE PROPERTY IS LOCATED WITHIN ZONE "X" AREAS OF MINIMAL FLOOD HAZARD AND A PORTION OF THIS PROPERTY IS LOCATED WITHIN SHADED ZONE "A" AREAS OF SPECIAL FLOOD HAZARD SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD, NO BASE FLOOD ELEVATIONS DETERMINED.
- ALL BEARING ARE REFERENCED IN NAD 1983 CENTRAL TEXAS STATE PLANE BASED ON THE RTK COOPERATIVE NETWORK.
- ALL UTILITIES SHOWN ARE BASED ON ABOVE GROUND VISIBLE FEATURES.
- REFERENCE COMMITMENT FOR TITLE INSURANCE ISSUED BY FIRST NATIONAL TITLE INSURANCE COMPANY, COUNTERSIGNED BY TEXAS TITLE-PEARSON FEE ATTORNEY, G.F. NO. 2117114-21, HAVING AN EFFECTIVE DATE OF SEPTEMBER 14, 2021, AND AN ISSUE DATE OF SEPTEMBER 23, 2021, NO FURTHER RESEARCH FOR EASEMENT OR ENCUMBRANCES WAS PERFORMED BY COLLIER ENGINEERING AND DESIGN.
- ELEVATIONS SHOWN HEREON ARE BASED ON THE CITY OF TEMPLE MONUMENT HV70, LOCATED ON SEPTEMBER 28, 2021, WITH A PUBLISHED ELEVATION OF 512.4' FEET, NGVD1929 ADJUSTMENT.



**DEVELOPMENT STATISTICS**

RESIDENTIAL LOTS	=	210
TOTAL NUMBER OF BLOCKS	=	9
TOTAL NUMBER OF TRACTS	=	5
MINIMUM LOT SIZE	=	21,780 SF
TOTAL ACREAGE OF THE MAXIMO MORENO SURVEY, ABSTRACT NO. 14, BELL COUNTY, TEXAS	=	160.446 ACRES

**EASEMENTS AND BUILDING LINES (UNLESS OTHERWISE NOTED)**

FRONT BUILDING LINE	=	25'
SIDE STREET BUILDING LINE	=	15'
SIDE BUILDING LINES	=	10'
REAR BUILDING LINE	=	15'

15' UTILITY EASEMENT ALONG ALL ROAD FRONTAGE

**CUL-DE-SAC NOTES**

PAVEMENT WIDTH	=	50'
RIGHT-OF-WAY WIDTH	=	60'

**LEGEND**

	APPROXIMATE LIMITS OF FEMA FLOOD HAZARD ZONE A/AE, AS PER F.I.R.M. PANEL NO. 48027C0365E, DATED SEPTEMBER 26, 2008
	APPROXIMATE LIMITS OF FEMA FLOODPLAIN, AS PER F.I.R.M. PANEL NO. 48027C0365E, DATED SEPTEMBER 26, 2008
	PHASE I DEVELOPMENT
	PHASE II DEVELOPMENT
	PHASE III DEVELOPMENT



**COTTON BOTTOM ESTATES**  
 NEW RESIDENTIAL DEVELOPMENT  
 TEMPLE ETJ,  
 BELL COUNTY, TEXAS

**PRELIMINARY PLAT**

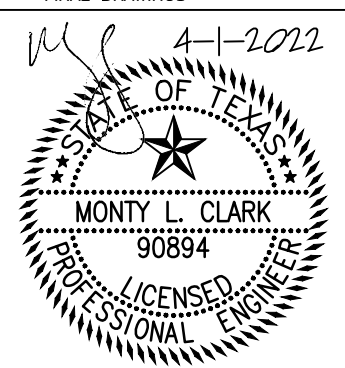
**DRAWING STATUS**

THESE DRAWINGS WERE PREPARED UNDER THE AUTHORITY OF MONTY L. CLARK, P.E. 90894, CLARK ASSOCIATES PLLC FIRM NO. F-23184.

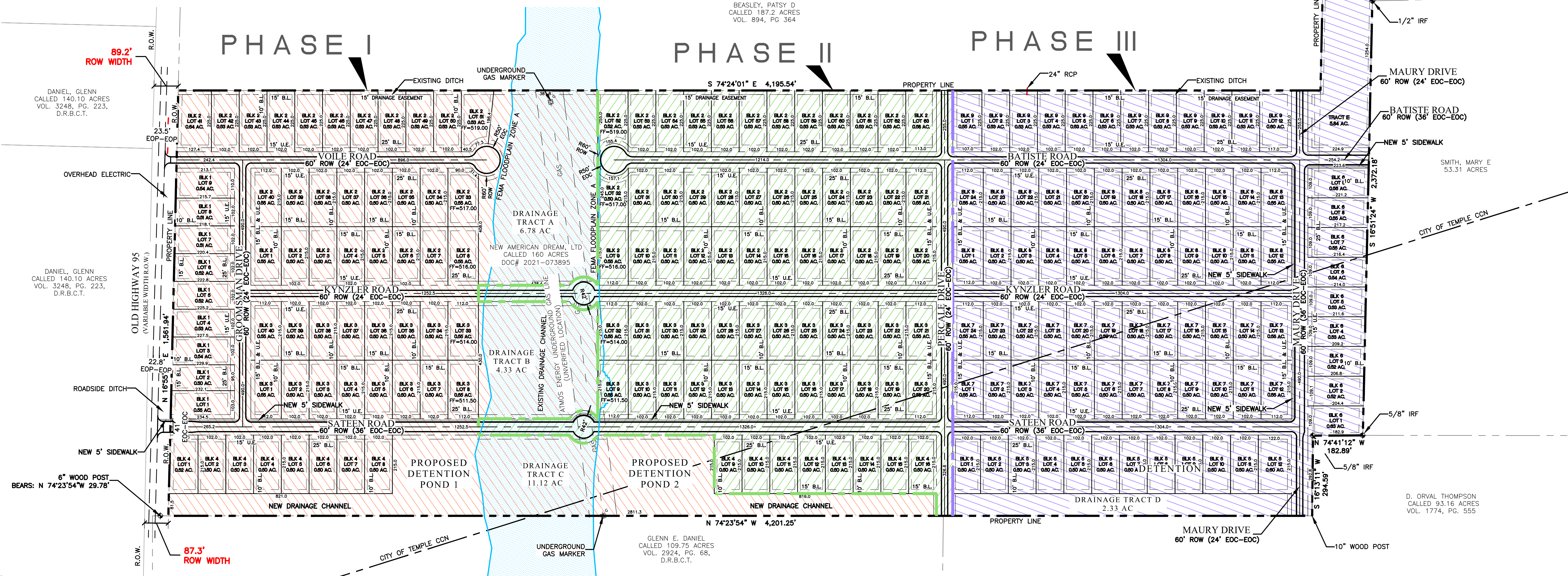
FOR REVIEW  
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FOR CONSTRUCTION FINAL DRAWINGS

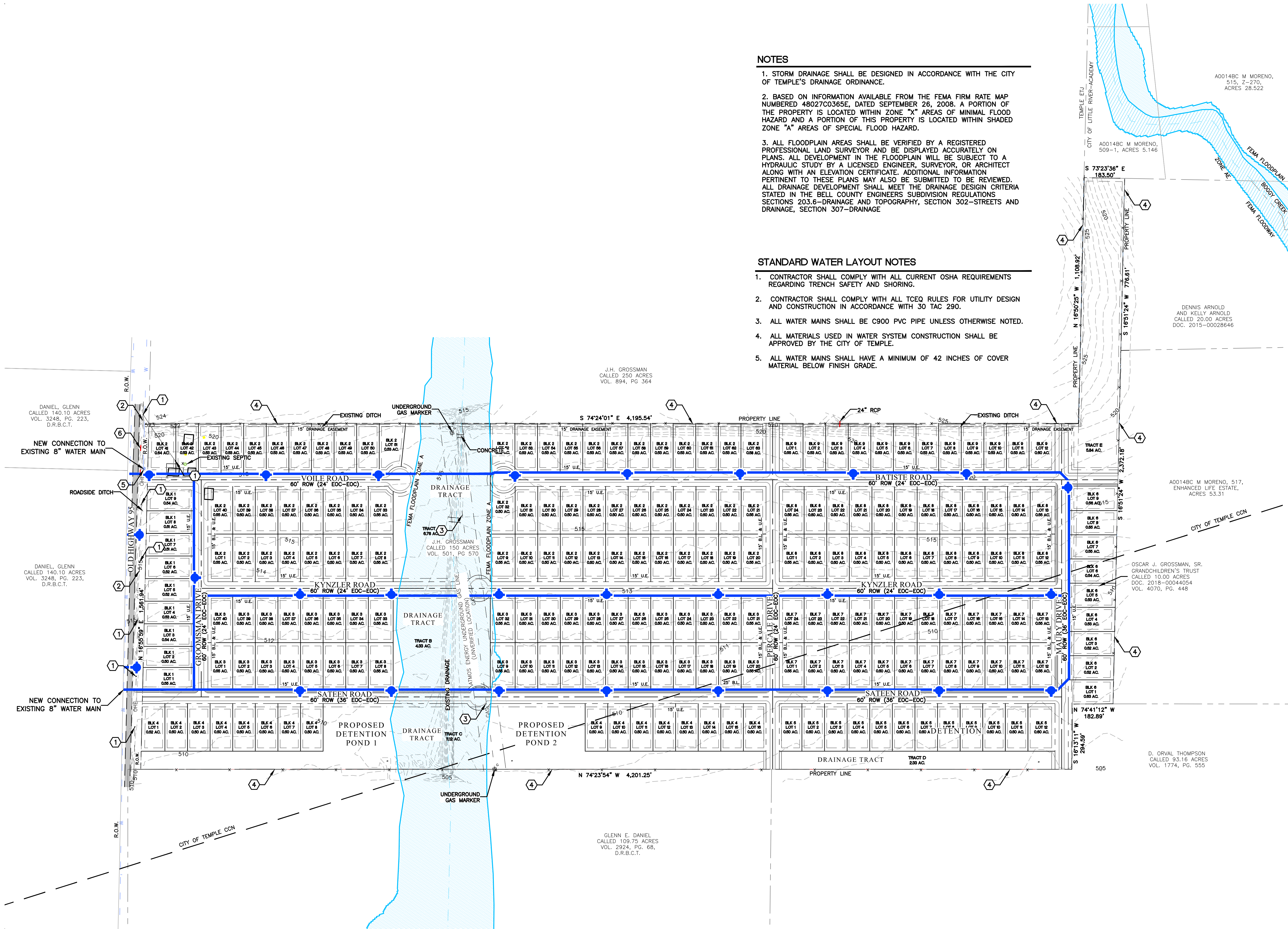
Designed	MLC
Drafted	PRA
Project No	212309.00
Plot Date	4-1-2022



**1**





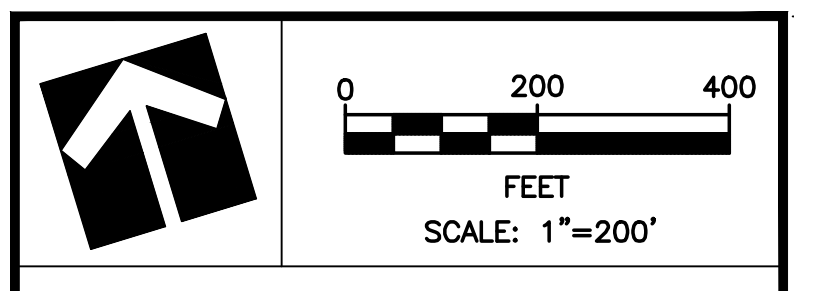


**NOTES**

1. STORM DRAINAGE SHALL BE DESIGNED IN ACCORDANCE WITH THE CITY OF TEMPLE'S DRAINAGE ORDINANCE.
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**STANDARD WATER LAYOUT NOTES**

1. CONTRACTOR SHALL COMPLY WITH ALL CURRENT OSHA REQUIREMENTS REGARDING TRENCH SAFETY AND SHORING.
2. CONTRACTOR SHALL COMPLY WITH ALL TCEO RULES FOR UTILITY DESIGN AND CONSTRUCTION IN ACCORDANCE WITH 30 TAC 290.
3. ALL WATER MAINS SHALL BE C900 PVC PIPE UNLESS OTHERWISE NOTED.
4. ALL MATERIALS USED IN WATER SYSTEM CONSTRUCTION SHALL BE APPROVED BY THE CITY OF TEMPLE.
5. ALL WATER MAINS SHALL HAVE A MINIMUM OF 42 INCHES OF COVER MATERIAL BELOW FINISH GRADE.



**LEGEND**

- NEW STANDARD FIRE HYDRANT
- PROPOSED 8" C900 PVC DR18 WATER MAIN
- EXISTING FIRE HYDRANT
- EXISTING WATER MAIN
- APPROXIMATE LIMITS OF FEMA FLOOD HAZARD ZONE AE, AS PER F.I.R.M. PANEL NO. 48027C0365E, DATED SEPTEMBER 26, 2008
- APPROXIMATE LIMITS OF FEMA FLOODWAY, AS PER F.I.R.M. PANEL NO. 48027C0365E, DATED SEPTEMBER 26, 2008

**KEYED NOTES**

1. CAUTION!!! EXISTING POWER POLE/LIGHT POLE
2. CAUTION!!! OVERHEAD ELECTRIC
3. CAUTION!!! EXISTING GAS MAIN
4. EXISTING FENCING
5. EXISTING WATER MAIN/METER
6. EXISTING STORM SEWER



**COTTON BOTTOM ESTATES**  
 NEW RESIDENTIAL DEVELOPMENT  
 TEMPLE, TX  
 BELL COUNTY, TEXAS

**TOPOGRAPHIC AND UTILITY MAP**

**DRAWING STATUS**  
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 FOR CONSTRUCTION  
 FINAL DRAWINGS

Designed	MLC
Drafted	PRA
Project No	212309.00
Plot Date	4-1-2022

4-1-2022

STATE OF TEXAS  
 MONTY L. CLARK  
 90894  
 LICENSED PROFESSIONAL ENGINEER

2



**RATIONAL METHOD DRAINAGE CALCULATIONS**

PRE DEVELOPMENT						
AREA DESIGNATION	AREA (acres)	Tc (min.)	COEF. OF RUNOFF	FREQ.	INTEN. (in./hr.)	PEAK DISCHARGE (cfs)
Area 1	67.04	49	0.25	2	2.22	37.25
Area 1	67.04	49	0.28	5	2.94	55.18
Area 1	67.04	49	0.30	10	3.27	65.67
Area 1	67.04	49	0.34	25	3.85	87.65
Area 1	67.04	49	0.37	50	4.24	105.10
Area 1	67.04	49	0.41	100	4.63	127.28
Area 2	90.15	53	0.25	2	2.09	47.20
Area 2	90.15	53	0.28	5	2.81	70.81
Area 2	90.15	53	0.30	10	3.12	84.40
Area 2	90.15	53	0.34	25	3.67	112.48
Area 2	90.15	53	0.37	50	4.05	135.04
Area 2	90.15	53	0.41	100	4.42	163.43
Area 3	3.28	16	0.25	2	4.29	3.51
Area 3	3.28	16	0.28	5	5.09	4.68
Area 3	3.28	16	0.30	10	5.62	5.53
Area 3	3.28	16	0.34	25	6.47	7.22
Area 3	3.28	16	0.37	50	7.19	8.72
Area 3	3.28	16	0.41	100	7.74	10.40

"C" VALUES						
STORM EVENT	2	5	10	25	50	100
IMPERVIOUS COVER	0.75	0.80	0.83	0.88	0.92	0.97
SF LOTS	0.32	0.34	0.36	0.41	0.44	0.48
GRASS AREAS	0.25	0.28	0.30	0.34	0.37	0.41

**COMPOSITE "C" CALCULATION**

COMPOSITE "C" =  $\frac{A1 \times C1 + A2 \times C2 + A3 \times C3}{A1 + A2 + A3}$

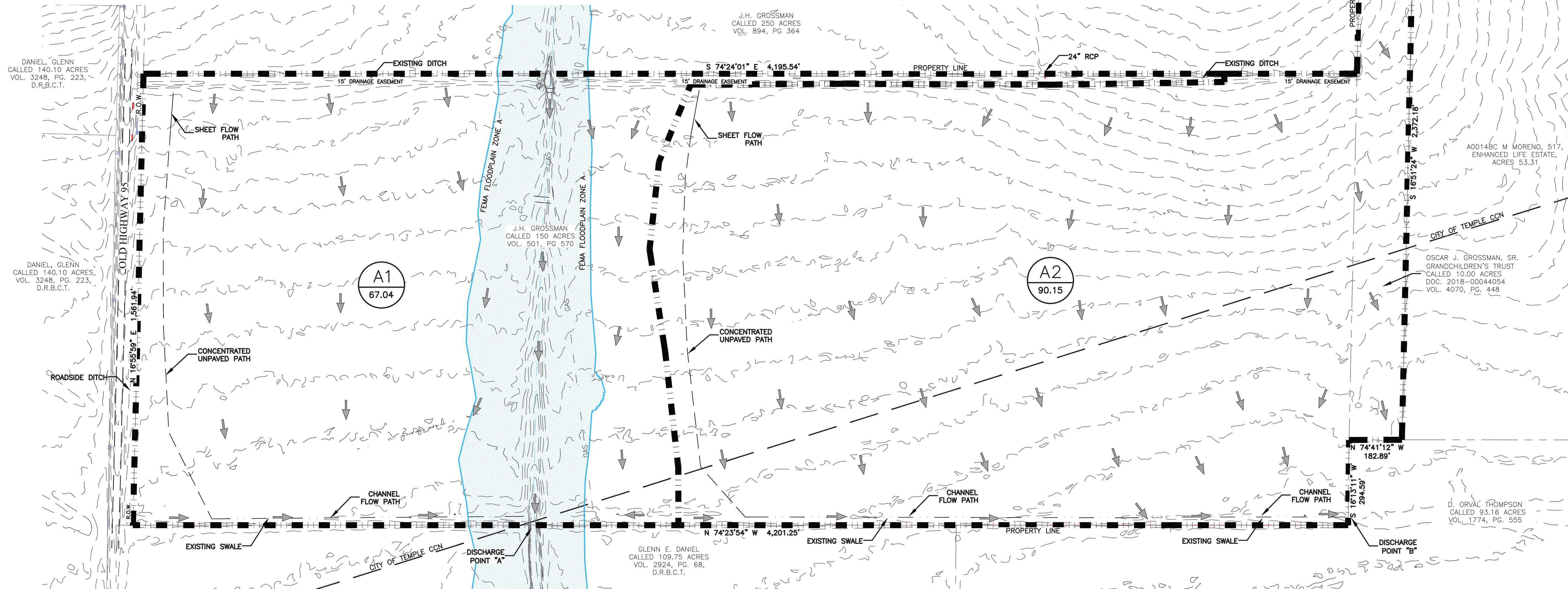
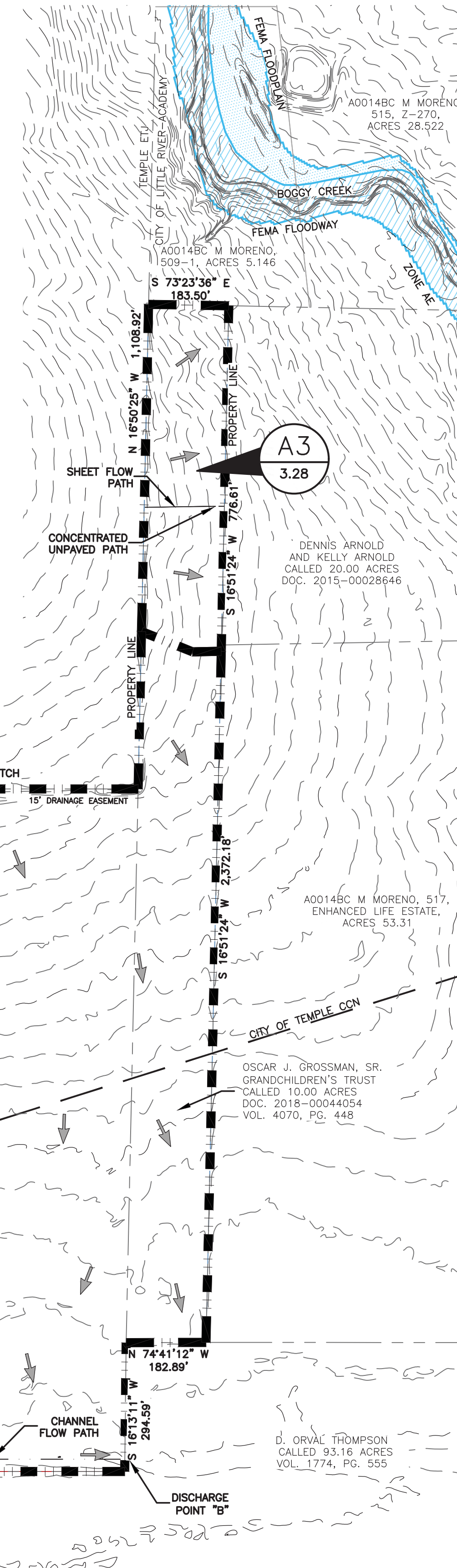
COVER (ACRES)	A1-PRE	A2-PRE	A3-PRE
IMPERVIOUS COVER	0.00	0.00	0.00
GRAVEL AREAS	0.00	0.00	0.00
UNIMPROVED GRASS	67.04	90.15	3.28
<b>TOTAL</b>	<b>67.04</b>	<b>90.15</b>	<b>3.28</b>

**TIME OF CONCENTRATION CALCULATIONS**

	A1-PRE	A2-PRE	A3-PRE
<b>SHEET FLOW</b>	150'@1.0% 23.01 MIN.	150'@1.0% 23.01 MIN.	150'@2.8% 15.35 MIN.
<b>CONCENTRATED FLOW UNPAVED</b>	1360'@0.7% 17.43 MIN.	1400'@0.6% 19.50 MIN.	30'@2.8% 0.19 MIN.
<b>PAVED</b>	=	=	=
<b>CHANNEL FLOW</b>	1075'@0.5% 8.12 MIN.	1360'@0.5% 10.27 MIN.	=
<b>TOTAL</b>	<b>48.56 MIN.</b>	<b>52.78 MIN.</b>	<b>15.54 MIN.</b>

**FLOODPLAIN NOTES**

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**LEGEND**

**DRAINAGE DESIGN CRITERIA**

XX AREA DRAINAGE AREA IN ACRES

RATIONAL METHOD EQUATION  
Q = (C) (I) (A)

DRAINAGE BASIN AREA DIVIDE

DIRECTIONAL FLOW ARROW

APPROXIMATE LIMITS OF FEMA FLOOD HAZARD ZONE AE, AS PER F.I.R.M. PANEL NO. 48027C0365E, DATED SEPTEMBER 26, 2008

APPROXIMATE LIMITS OF FEMA FLOODWAY, AS PER F.I.R.M. PANEL NO. 48027C0365E, DATED SEPTEMBER 26, 2008

**NOTES**

1. STORM DRAINAGE SHALL BE DESIGNED IN ACCORDANCE WITH THE CITY OF TEMPLE'S DRAINAGE ORDINANCE.

**CLARK ASSOCIATES**  
CIVIL ENGINEERING • DESIGN • PLANNING

**COTTON BOTTOM ESTATES**  
NEW RESIDENTIAL DEVELOPMENT  
TEMPLE, TX, BELL COUNTY, TEXAS

**PRE-DEVELOPMENT DRAINAGE MAP**

**DRAWING STATUS**

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FOR CONSTRUCTION: FINAL DRAWINGS

DESIGNED: MLC  
DRAFTED: PRA  
PROJECT NO: 212309.00  
PLOT DATE: 4-1-2022

3



### Hydrograph Report

1

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 1

2309 Pre-Dev A1 2yr

Hydrograph type	= Rational	Peak discharge	= 37.25 cfs
Storm frequency	= 2 yrs	Time to peak	= 49 min
Time interval	= 1 min	Hyd. volume	= 109,528 cuft
Drainage area	= 67.040 ac	Runoff coeff.	= 0.25*
Intensity	= 2.223 in/hr	Tc by TR55	= 49.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\*Composite (Area/C) = + (67.040 x 0.25) / 67.040



### Hydrograph Report

14

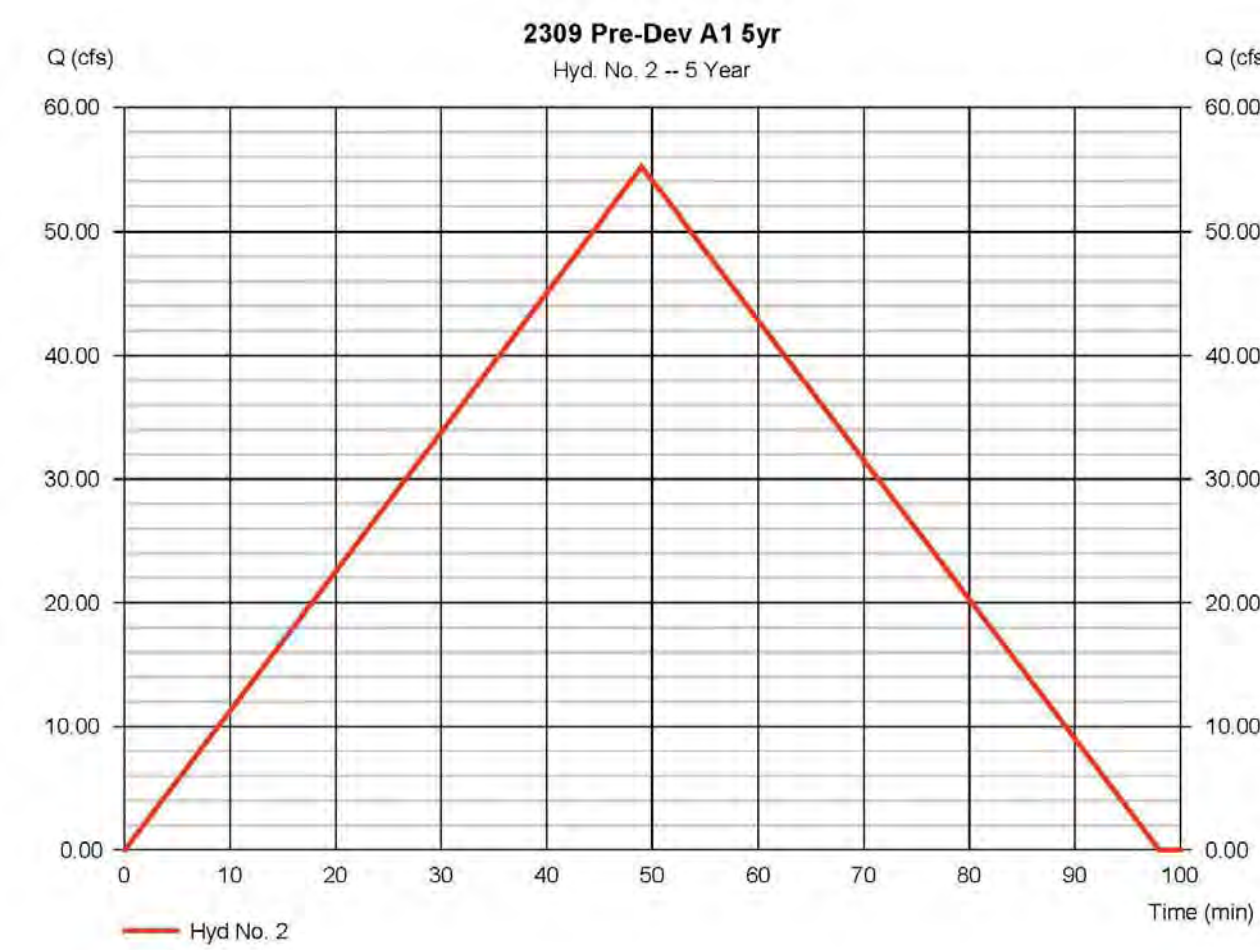
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 2

2309 Pre-Dev A1 5yr

Hydrograph type	= Rational	Peak discharge	= 55.18 cfs
Storm frequency	= 5 yrs	Time to peak	= 49 min
Time interval	= 1 min	Hyd. volume	= 162,237 cuft
Drainage area	= 67.040 ac	Runoff coeff.	= 0.28*
Intensity	= 2.940 in/hr	Tc by TR55	= 49.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\*Composite (Area/C) = + (67.040 x 0.28) / 67.040



### Hydrograph Report

21

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 3

2309 Pre-Dev A1 10yr

Hydrograph type	= Rational	Peak discharge	= 65.67 cfs
Storm frequency	= 10 yrs	Time to peak	= 49 min
Time interval	= 1 min	Hyd. volume	= 193,081 cuft
Drainage area	= 67.040 ac	Runoff coeff.	= 0.3*
Intensity	= 3.265 in/hr	Tc by TR55	= 49.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\*Composite (Area/C) = + (67.040 x 0.30) / 67.040



### Hydrograph Report

28

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 4

2309 Pre-Dev A1 25yr

Hydrograph type	= Rational	Peak discharge	= 87.65 cfs
Storm frequency	= 25 yrs	Time to peak	= 49 min
Time interval	= 1 min	Hyd. volume	= 257,688 cuft
Drainage area	= 67.040 ac	Runoff coeff.	= 0.34*
Intensity	= 3.845 in/hr	Tc by TR55	= 49.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\*Composite (Area/C) = + (67.040 x 0.34) / 67.040



### Hydrograph Report

35

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 5

2309 Pre-Dev A1 50yr

Hydrograph type	= Rational	Peak discharge	= 105.10 cfs
Storm frequency	= 50 yrs	Time to peak	= 49 min
Time interval	= 1 min	Hyd. volume	= 308,994 cuft
Drainage area	= 67.040 ac	Runoff coeff.	= 0.37*
Intensity	= 4.237 in/hr	Tc by TR55	= 49.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\*Composite (Area/C) = + (67.040 x 0.37) / 67.040



### Hydrograph Report

42

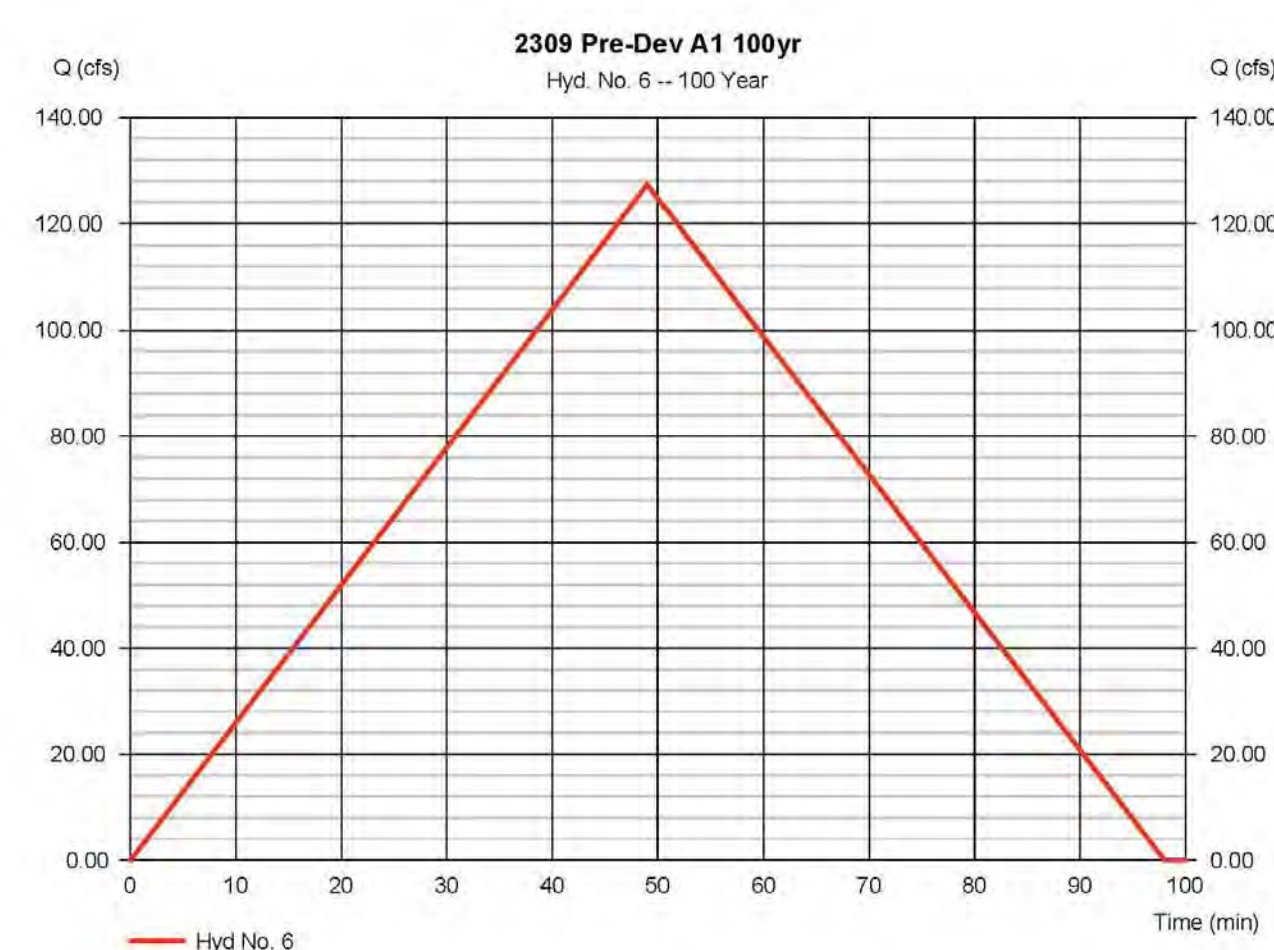
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 6

2309 Pre-Dev A1 100yr

Hydrograph type	= Rational	Peak discharge	= 127.28 cfs
Storm frequency	= 100 yrs	Time to peak	= 49 min
Time interval	= 1 min	Hyd. volume	= 374,198 cuft
Drainage area	= 67.040 ac	Runoff coeff.	= 0.41*
Intensity	= 4.631 in/hr	Tc by TR55	= 49.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\*Composite (Area/C) = + (67.040 x 0.41) / 67.040



## 1 AREA 1 PRE-DEV DRAINAGE CALCULATIONS



**COTTON BOTTOM ESTATES**  
NEW RESIDENTIAL DEVELOPMENT

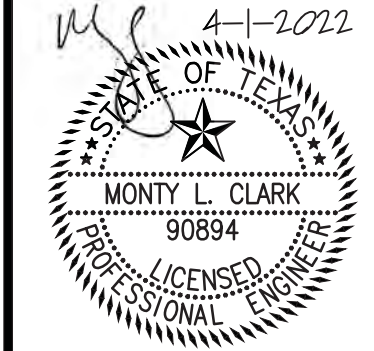
TEMPLE, TX,  
BELL COUNTY, TEXAS

**PRE-DEVELOPMENT DRAINAGE CALCULATIONS SHEET 1**

#### DRAWING STATUS

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4



### Hydrograph Report

1

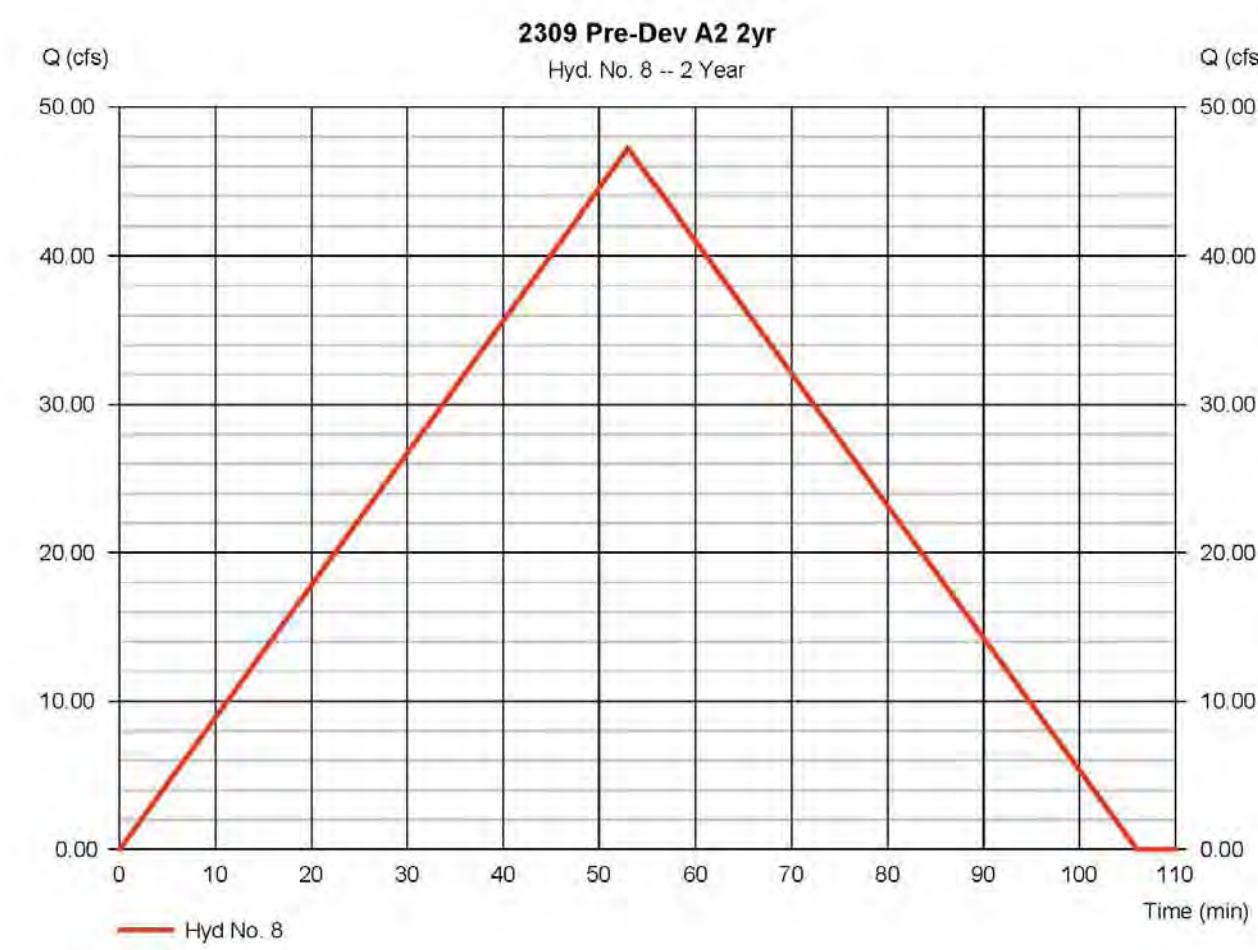
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#### Hyd. No. 8

2309 Pre-Dev A2 2yr

Hydrograph type	= Rational	Peak discharge	= 47.20 cfs
Storm frequency	= 2 yrs	Time to peak	= 53 min
Time interval	= 1 min	Hyd. volume	= 150,105 cuft
Drainage area	= 90.150 ac	Runoff coeff.	= 0.25*
Intensity	= 2.094 in/hr	Tc by TR55	= 53.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\*Composite (Area/C) = + (90.150 x 0.25) / 90.150



### Hydrograph Report

14

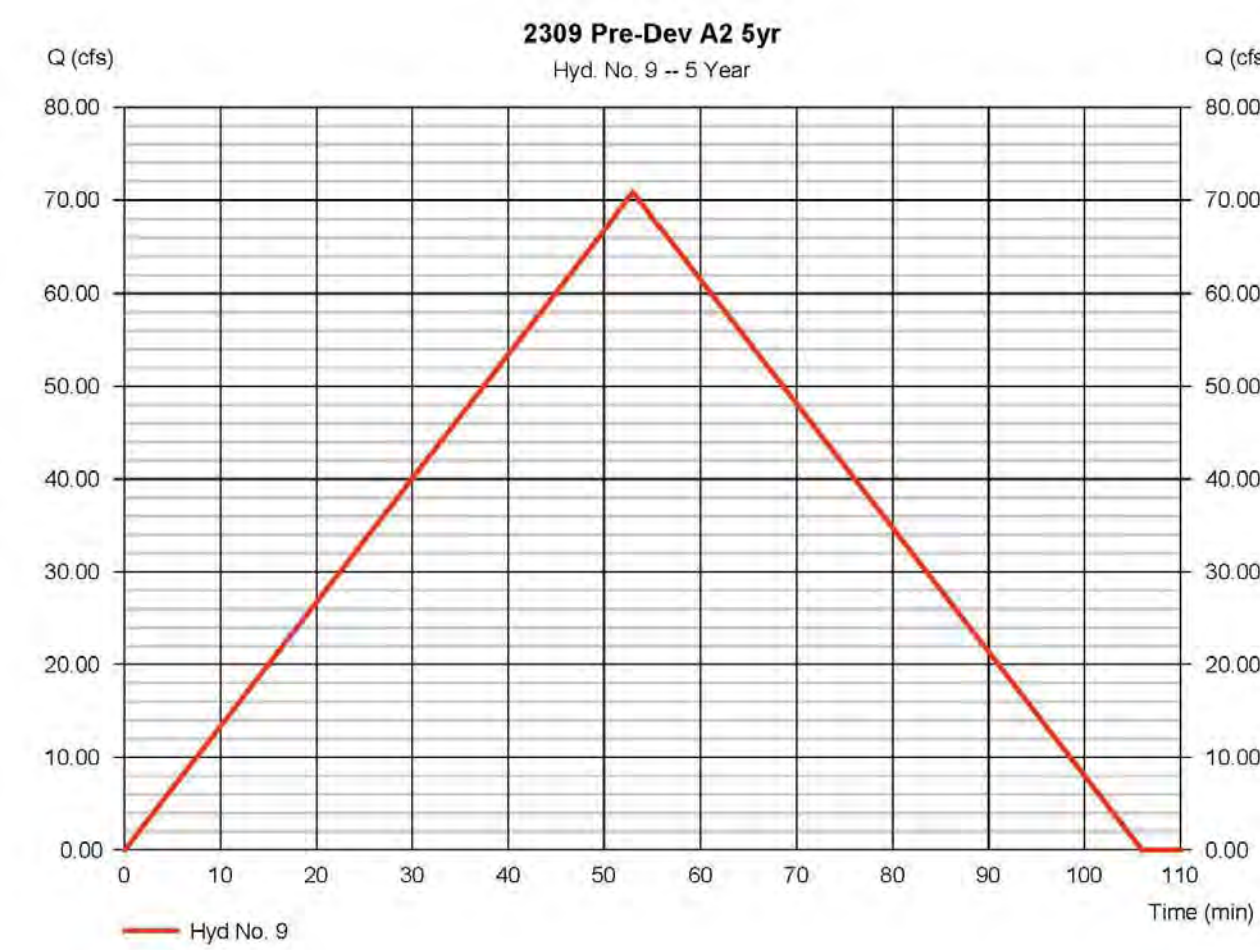
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 9

2309 Pre-Dev A2 5yr

Hydrograph type	= Rational	Peak discharge	= 70.81 cfs
Storm frequency	= 5 yrs	Time to peak	= 53 min
Time interval	= 1 min	Hyd. volume	= 225,171 cuft
Drainage area	= 90.150 ac	Runoff coeff.	= 0.28*
Intensity	= 2.805 in/hr	Tc by TR55	= 53.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\*Composite (Area/C) = + (90.150 x 0.28) / 90.150



### Hydrograph Report

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Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 10

2309 Pre-Dev A2 10yr

Hydrograph type	= Rational	Peak discharge	= 84.40 cfs
Storm frequency	= 10 yrs	Time to peak	= 53 min
Time interval	= 1 min	Hyd. volume	= 268,380 cuft
Drainage area	= 90.150 ac	Runoff coeff.	= 0.3*
Intensity	= 3.121 in/hr	Tc by TR55	= 53.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\*Composite (Area/C) = + (90.150 x 0.30) / 90.150



### Hydrograph Report

28

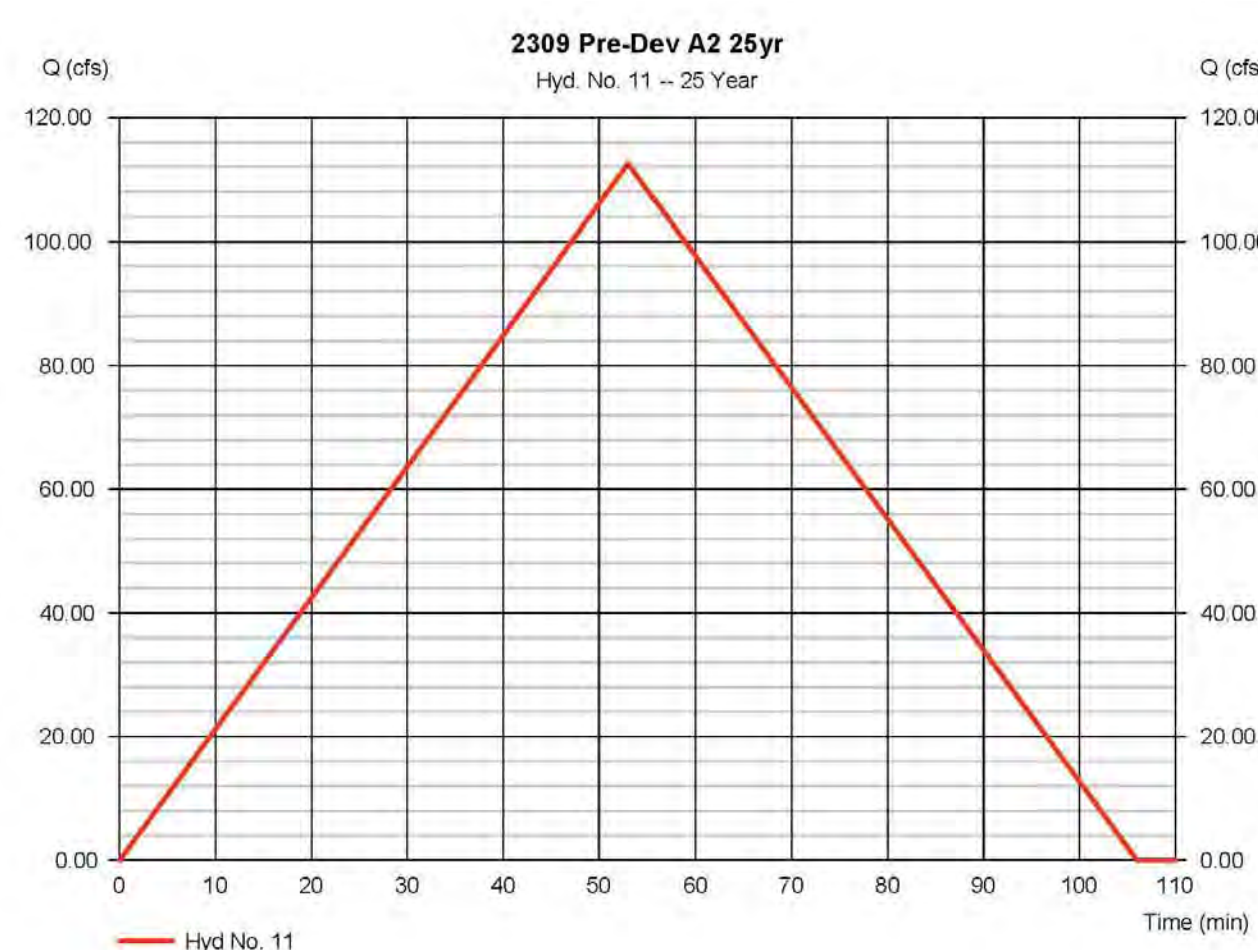
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 11

2309 Pre-Dev A2 25yr

Hydrograph type	= Rational	Peak discharge	= 112.48 cfs
Storm frequency	= 25 yrs	Time to peak	= 53 min
Time interval	= 1 min	Hyd. volume	= 357,696 cuft
Drainage area	= 90.150 ac	Runoff coeff.	= 0.34*
Intensity	= 3.670 in/hr	Tc by TR55	= 53.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\*Composite (Area/C) = + (90.150 x 0.34) / 90.150



### Hydrograph Report

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Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 12

2309 Pre-Dev A2 50yr

Hydrograph type	= Rational	Peak discharge	= 135.04 cfs
Storm frequency	= 50 yrs	Time to peak	= 53 min
Time interval	= 1 min	Hyd. volume	= 429,425 cuft
Drainage area	= 90.150 ac	Runoff coeff.	= 0.37*
Intensity	= 4.048 in/hr	Tc by TR55	= 53.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\*Composite (Area/C) = + (90.150 x 0.37) / 90.150



### Hydrograph Report

42

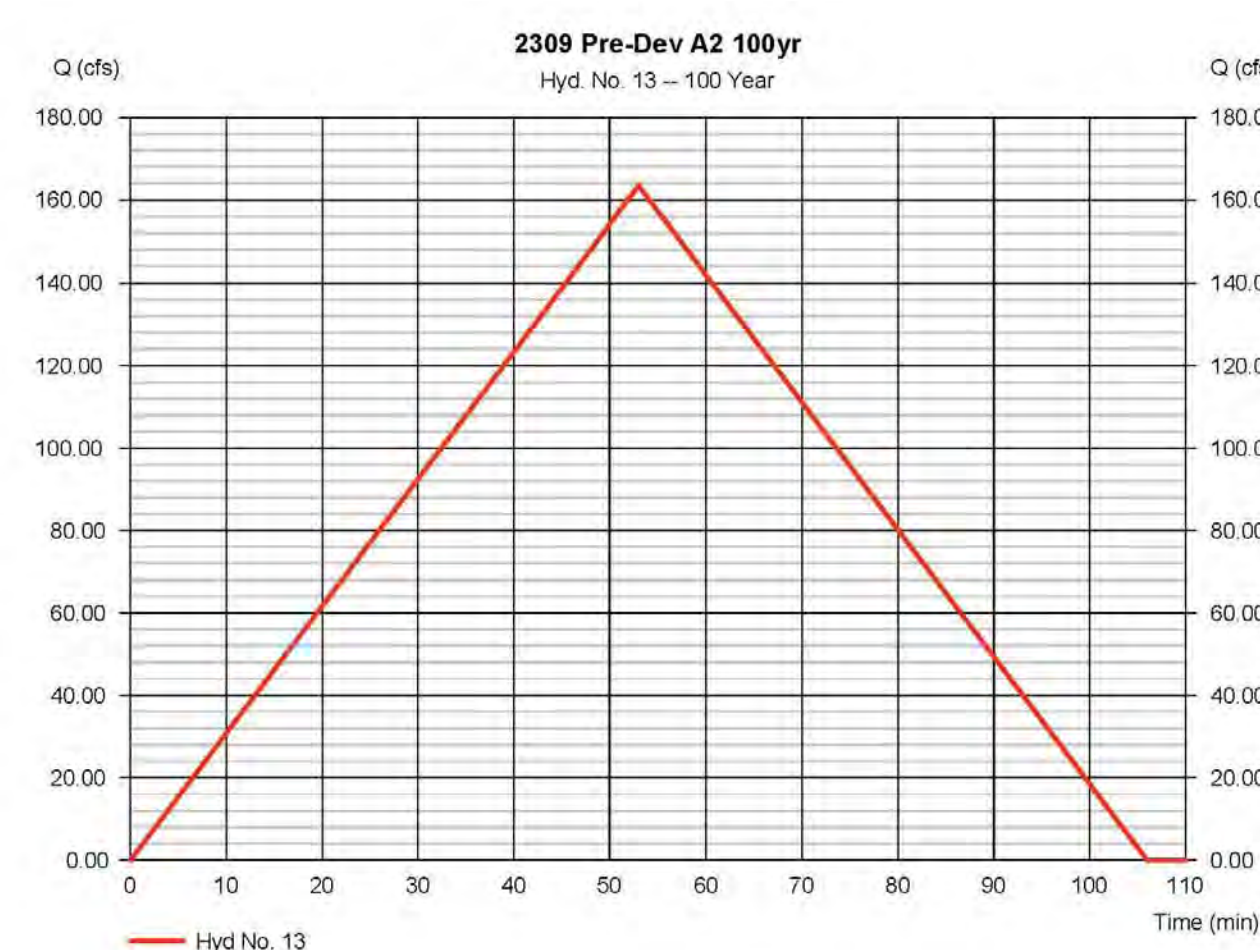
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 13

2309 Pre-Dev A2 100yr

Hydrograph type	= Rational	Peak discharge	= 163.43 cfs
Storm frequency	= 100 yrs	Time to peak	= 53 min
Time interval	= 1 min	Hyd. volume	= 519,705 cuft
Drainage area	= 90.150 ac	Runoff coeff.	= 0.41*
Intensity	= 4.422 in/hr	Tc by TR55	= 53.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\*Composite (Area/C) = + (90.150 x 0.41) / 90.150



## 2 AREA 2 PRE-DEV DRAINAGE CALCULATIONS



**COTTON BOTTOM ESTATES**  
NEW RESIDENTIAL DEVELOPMENT

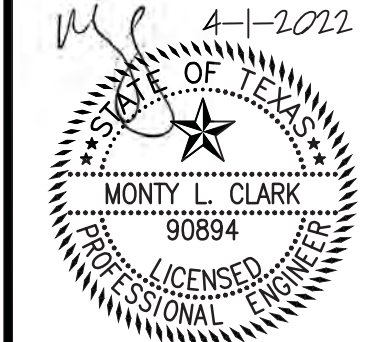
TEMPLE, TX,  
BELL COUNTY, TEXAS

PRE-DEVELOPMENT  
DRAINAGE CALCULATIONS  
SHEET 2

#### DRAWING STATUS

THESE DRAWINGS WERE PREPARED UNDER THE AUTHORITY OF MONTY L. CLARK, P.E. 90894, CLARK ASSOCIATES PLLC FIRM NO.: F-23184.  
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 FOR CONSTRUCTION  
 FINAL DRAWINGS

Designed	MLC
Drafted	PRA
Project No	212309.00
Plot Date	4-1-2022



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### Hydrograph Report

1

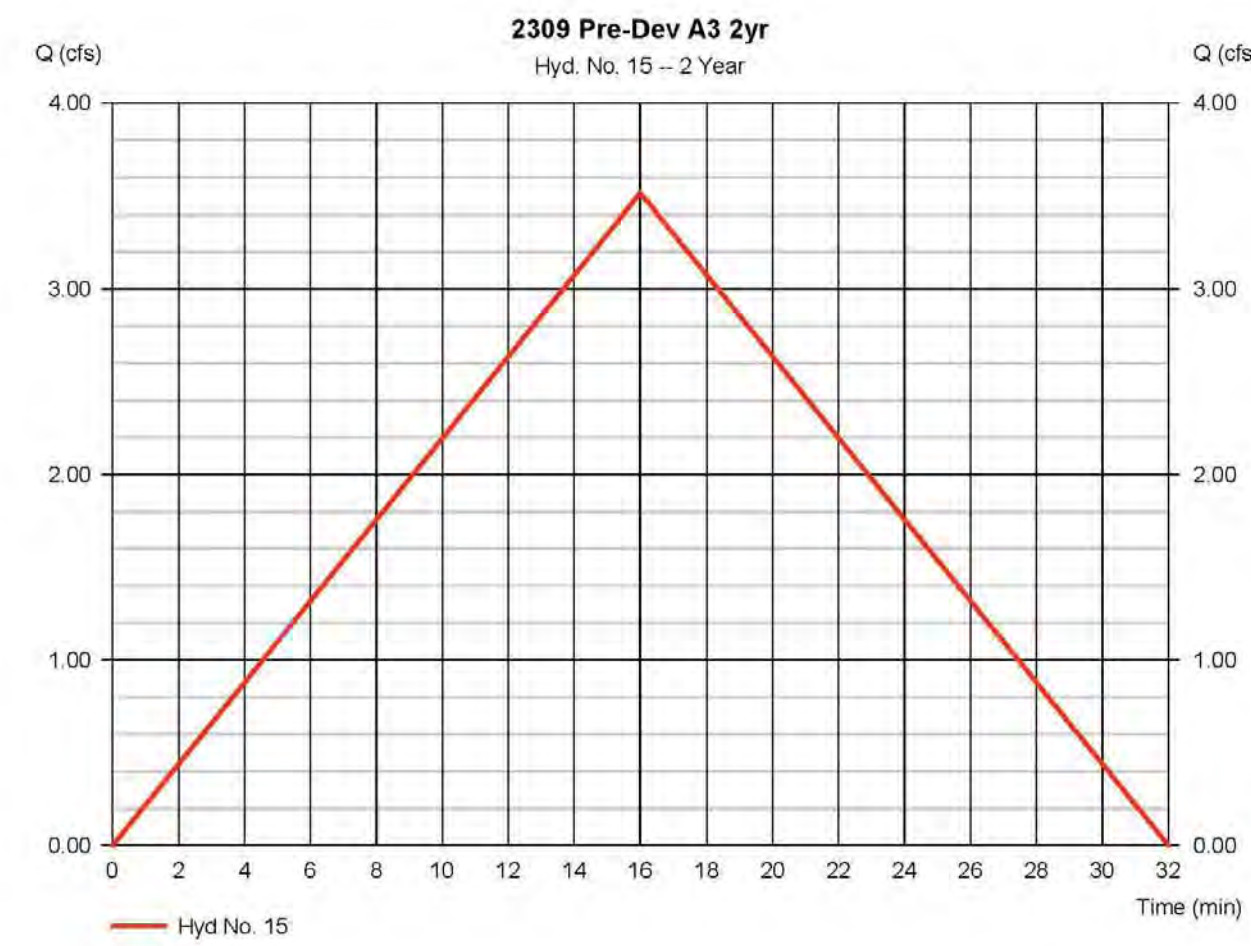
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 15

2309 Pre-Dev A3 2yr

Hydrograph type	= Rational	Peak discharge	= 3.513 cfs
Storm frequency	= 2 yrs	Time to peak	= 16 min
Time interval	= 1 min	Hyd. volume	= 3,373 cuft
Drainage area	= 3.280 ac	Runoff coeff.	= 0.25*
Intensity	= 4.285 in/hr	Tc by TR55	= 16.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = + (3.280 x 0.25) / 3.280



### Hydrograph Report

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Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 16

2309 Pre-Dev A3 5yr

Hydrograph type	= Rational	Peak discharge	= 4.676 cfs
Storm frequency	= 5 yrs	Time to peak	= 16 min
Time interval	= 1 min	Hyd. volume	= 4,489 cuft
Drainage area	= 3.280 ac	Runoff coeff.	= 0.28*
Intensity	= 5.092 in/hr	Tc by TR55	= 16.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = + (3.280 x 0.28) / 3.280



### Hydrograph Report

21

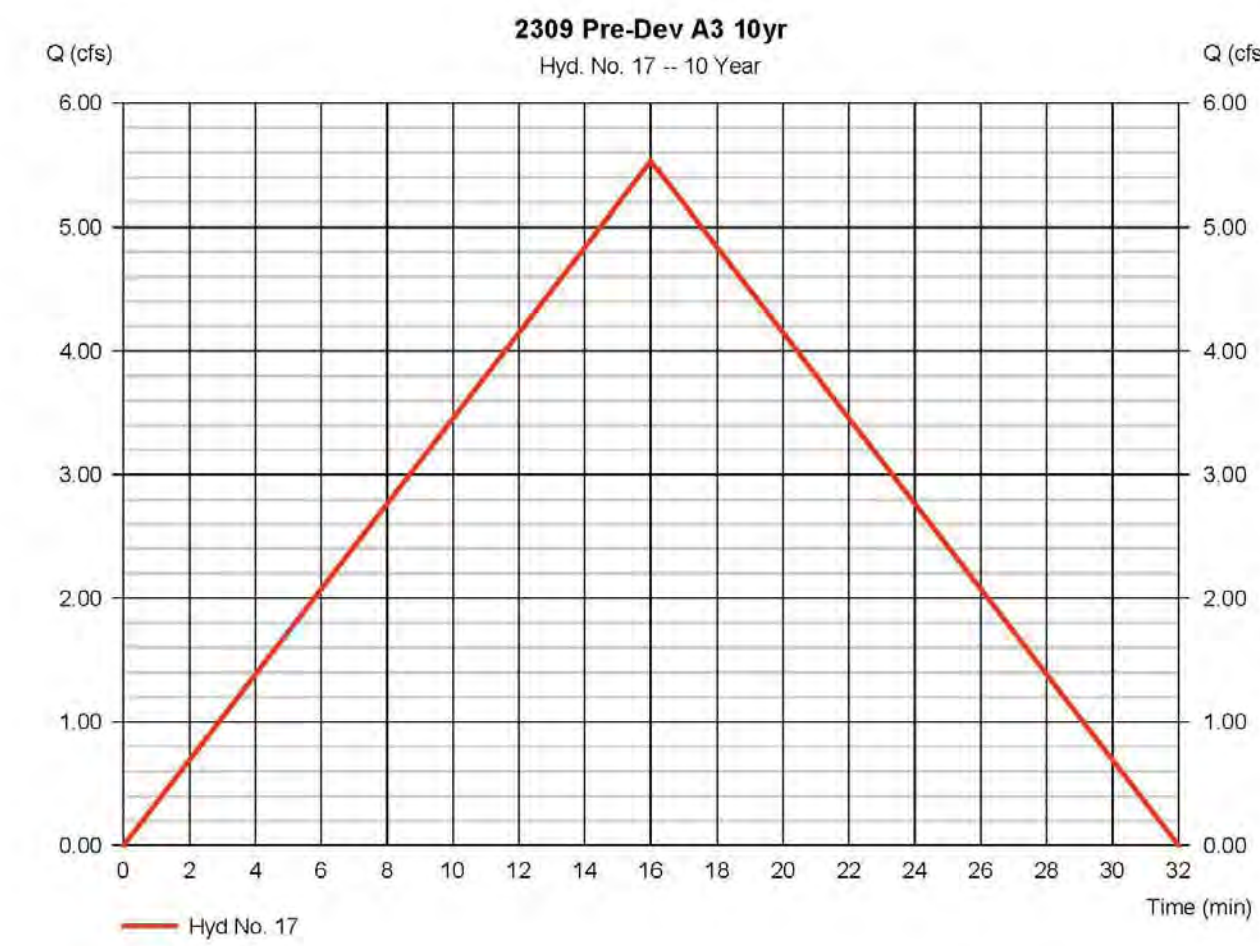
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 17

2309 Pre-Dev A3 10yr

Hydrograph type	= Rational	Peak discharge	= 5.527 cfs
Storm frequency	= 10 yrs	Time to peak	= 16 min
Time interval	= 1 min	Hyd. volume	= 5,306 cuft
Drainage area	= 3.280 ac	Runoff coeff.	= 0.3*
Intensity	= 5.617 in/hr	Tc by TR55	= 16.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = + (3.280 x 0.30) / 3.280



### Hydrograph Report

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Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 18

2309 Pre-Dev A3 25yr

Hydrograph type	= Rational	Peak discharge	= 7.219 cfs
Storm frequency	= 25 yrs	Time to peak	= 16 min
Time interval	= 1 min	Hyd. volume	= 6,931 cuft
Drainage area	= 3.280 ac	Runoff coeff.	= 0.34*
Intensity	= 6.474 in/hr	Tc by TR55	= 16.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = + (3.280 x 0.34) / 3.280



### Hydrograph Report

35

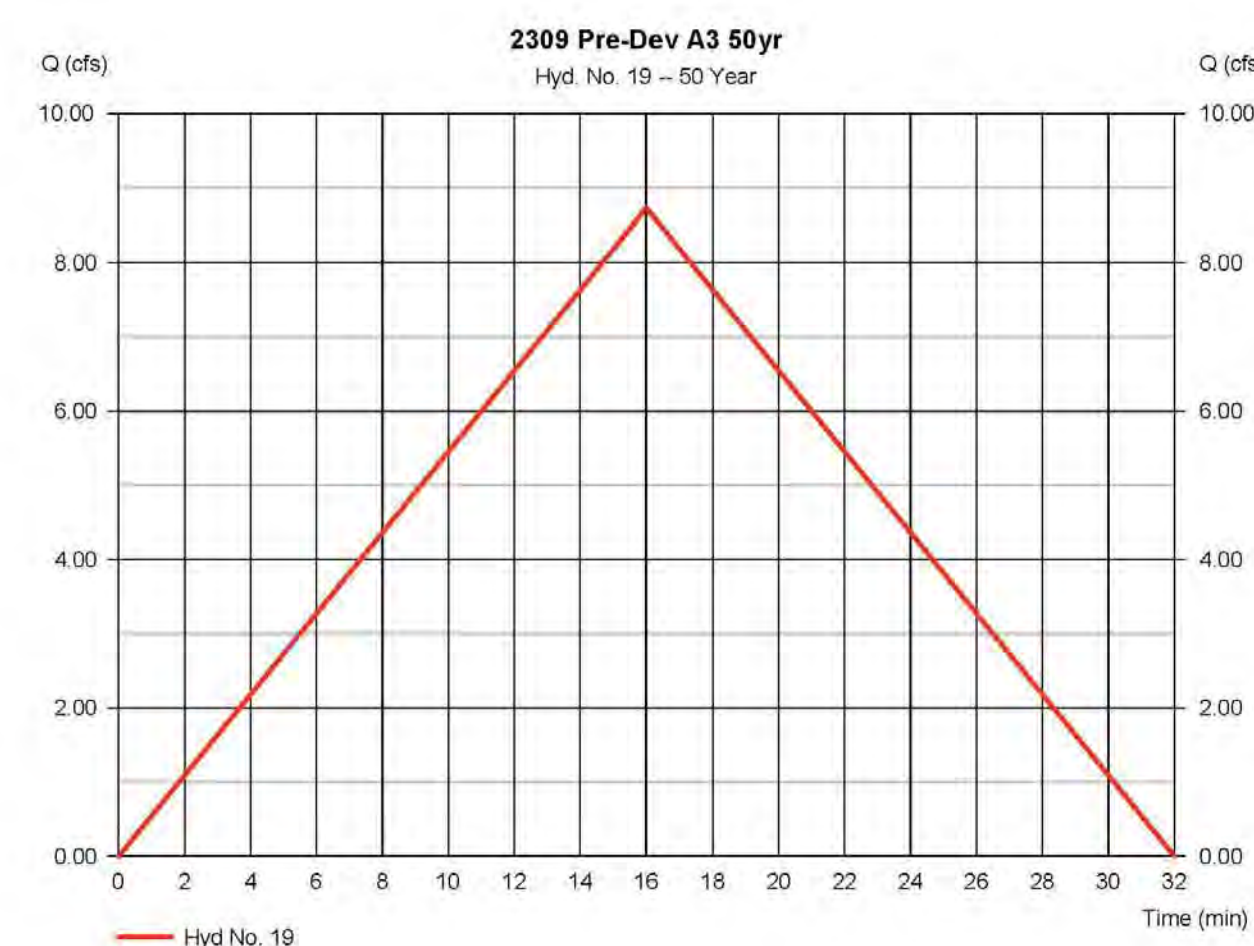
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 19

2309 Pre-Dev A3 50yr

Hydrograph type	= Rational	Peak discharge	= 8.722 cfs
Storm frequency	= 50 yrs	Time to peak	= 16 min
Time interval	= 1 min	Hyd. volume	= 8,373 cuft
Drainage area	= 3.280 ac	Runoff coeff.	= 0.37*
Intensity	= 7.187 in/hr	Tc by TR55	= 16.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = + (3.280 x 0.37) / 3.280



### Hydrograph Report

42

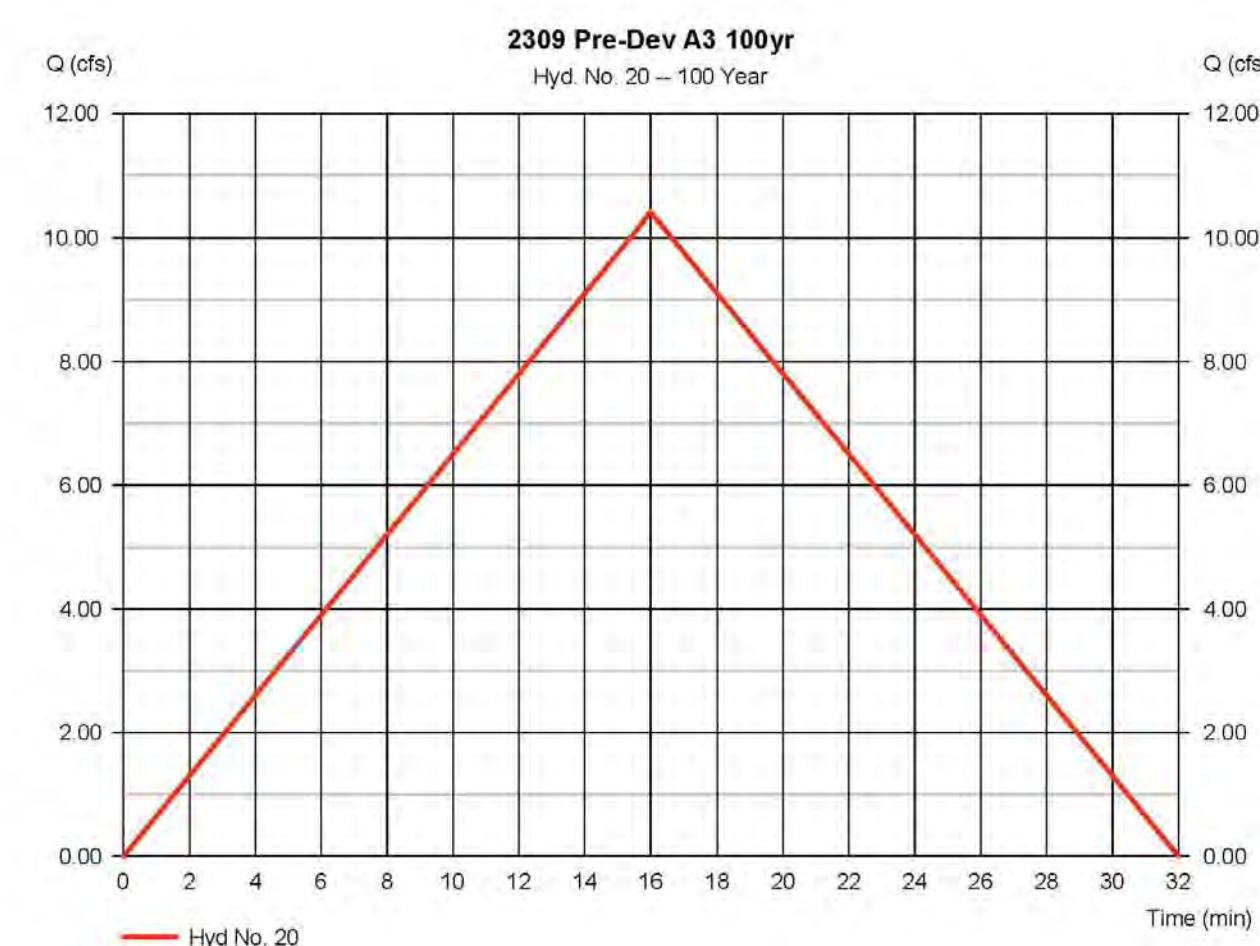
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 20

2309 Pre-Dev A3 100yr

Hydrograph type	= Rational	Peak discharge	= 10.40 cfs
Storm frequency	= 100 yrs	Time to peak	= 16 min
Time interval	= 1 min	Hyd. volume	= 9,986 cuft
Drainage area	= 3.280 ac	Runoff coeff.	= 0.41*
Intensity	= 7.735 in/hr	Tc by TR55	= 16.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = + (3.280 x 0.41) / 3.280



## 3 AREA 3 PRE-DEV DRAINAGE CALCULATIONS



**COTTON BOTTOM ESTATES**  
NEW RESIDENTIAL DEVELOPMENT

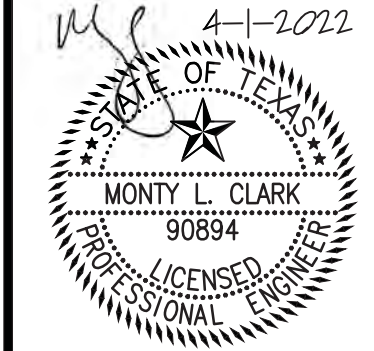
TEMPLE, TX,  
BELL COUNTY, TEXAS

PRE-DEVELOPMENT  
DRAINAGE CALCULATIONS  
SHEET 3

#### DRAWING STATUS

THESE DRAWINGS WERE PREPARED UNDER THE AUTHORITY OF MONTY L. CLARK, P.E. 90894, CLARK ASSOCIATES PLLC FIRM NO.: F-23184.  
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 FOR CONSTRUCTION  
 FINAL DRAWINGS

Designed	MLC
Drafted	PRA
Project No	212309.00
Plot Date	4-1-2022
<b>6</b>	





RATIONAL METHOD  
DRAINAGE CALCULATIONS

POST DEVELOPMENT													
AREA DESIGNATION	AREA (acres)	Tc (min.)	COEF. OF RUNOFF	FREQ.	INTEN. (in./hr.)	PEAK DISCHARGE (cfs)	AREA DESIGNATION	AREA (acres)	Tc (min.)	COEF. OF RUNOFF	FREQ.	INTEN. (in./hr.)	PEAK DISCHARGE (cfs)
Area 1a	40.67	18	0.34	2	4.07	56.24	Area 3	3.28	16	0.25	2	4.29	3.51
Area 1a	40.67	18	0.36	5	4.86	71.17	Area 3	3.28	16	0.28	5	5.09	4.68
Area 1a	40.67	18	0.38	10	5.36	82.84	Area 3	3.28	16	0.30	10	5.62	5.53
Area 1a	40.67	18	0.43	25	6.21	108.58	Area 3	3.28	16	0.34	25	6.47	7.22
Area 1a	40.67	18	0.46	50	6.88	128.65	Area 3	3.28	16	0.37	50	7.19	8.72
Area 1a	40.67	18	0.50	100	7.42	150.97	Area 3	3.28	16	0.41	100	7.74	10.40

MODIFIED RATIONAL METHOD  
DRAINAGE CALCULATIONS

POST DEVELOPMENT						
AREA DESIGNATION	AREA (acres)	Tc (min.)	COEF. OF RUNOFF	FREQ.	INTEN. (in./hr.)	MOD. PEAK DISCHARGE (cfs)
Area 1a	40.67	18	0.34	2	1.98	27.34
Area 1a	40.67	18	0.36	5	1.99	29.27
Area 1a	40.67	18	0.38	10	2.32	35.86
Area 1a	40.67	18	0.43	25	2.84	49.68
Area 1a	40.67	18	0.46	50	3.00	56.05
Area 1a	40.67	18	0.50	100	3.72	75.58
Area 2a	64.79	21	0.34	2	1.56	34.38
Area 2a	64.79	21	0.37	5	1.62	38.88
Area 2a	64.79	21	0.39	10	1.81	45.69
Area 2a	64.79	21	0.44	25	2.39	68.24
Area 2a	64.79	21	0.47	50	2.54	77.43
Area 2a	64.79	21	0.51	100	2.98	98.46

Table 1: Proposed Detention Pond 1 - Summary of Drainage Calculations

	I	II	III	IV = I - III	V	VI = V - IV
	A1 Pre-Dev (cfs)	A1a Modified Rational Post-Dev (cfs)	A1b Rational Post-Dev (cfs)	Req. Max. Pond Release Rate (cfs)	Calculated Pond Release Rate (cfs)	Δ (Calc Pond Release - Max Pond Release) (cfs)
Reference	4	13	9	n/a	15	n/a
2 Year	37.25	27.34	26.04	11.21	11.12	-0.09
5 Year	55.18	29.27	34.88	20.30	17.18	-3.12
10 Year	65.67	35.86	40.79	24.88	21.81	-3.07
25 Year	87.65	49.68	53.20	34.45	31.61	-2.84
50 Year	105.10	56.05	63.15	41.95	39.39	-2.56
100 Year	127.28	75.58	75.17	52.11	49.20	-2.91

Table 2: Proposed Detention Pond 2 - Summary of Drainage Calculations

	I	II	III	IV = I - III	V	VI = V - IV
	A2 Pre-Dev (cfs)	A2a Modified Rational Post-Dev (cfs)	A2b Rational Post-Dev (cfs)	Req. Max. Pond Release Rate (cfs)	Calculated Pond Release Rate (cfs)	Δ (Calc Pond Release - Max Pond Release) (cfs)
Reference	5	14	11	n/a	16	n/a
2 Year	47.20	34.38	36.59	10.61	10.34	-0.27
5 Year	70.81	38.88	47.72	23.09	21.17	-1.92
10 Year	84.40	45.69	55.46	28.94	27.34	-1.60
25 Year	112.48	68.24	72.64	39.84	38.45	-1.39
50 Year	135.04	77.43	85.84	49.20	48.85	-0.35
100 Year	163.43	98.46	100.71	62.72	59.88	-2.84

TIME OF CONCENTRATION CALCULATIONS

	A1a-POST	A1b-POST	A2a-POST	A2b-POST	A3-POST
<b>SHEET FLOW</b>	50'@1.0% 9.55 MIN.	150'@2.0% 17.44 MIN.	50'@1.0% 9.55 MIN.	50'@1.0% 9.55 MIN.	150'@2.8% 15.35 MIN.
<b>CONCENTRATED FLOW UNPAVED</b>	215'@1.0% 2.22 MIN.	320'@1.25% 2.96 MIN.	215'@1.0% 2.22 MIN.	405'@1.0% 4.18 MIN.	30'@2.8% 0.19 MIN.
<b>PAVED</b>	=	=	=	=	=
<b>CHANNEL FLOW</b>	1600'@0.5% 6.72 MIN.	1135'@0.5% 3.70 MIN.	2100'@0.5% 8.82 MIN.	1480'@0.5% 6.22 MIN.	=
<b>TOTAL</b>	18.49 MIN.	24.10 MIN.	20.59 MIN.	19.95 MIN.	15.54 MIN.

FLOODPLAIN NOTES

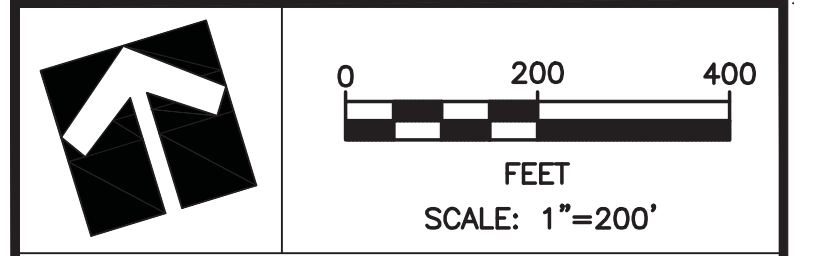
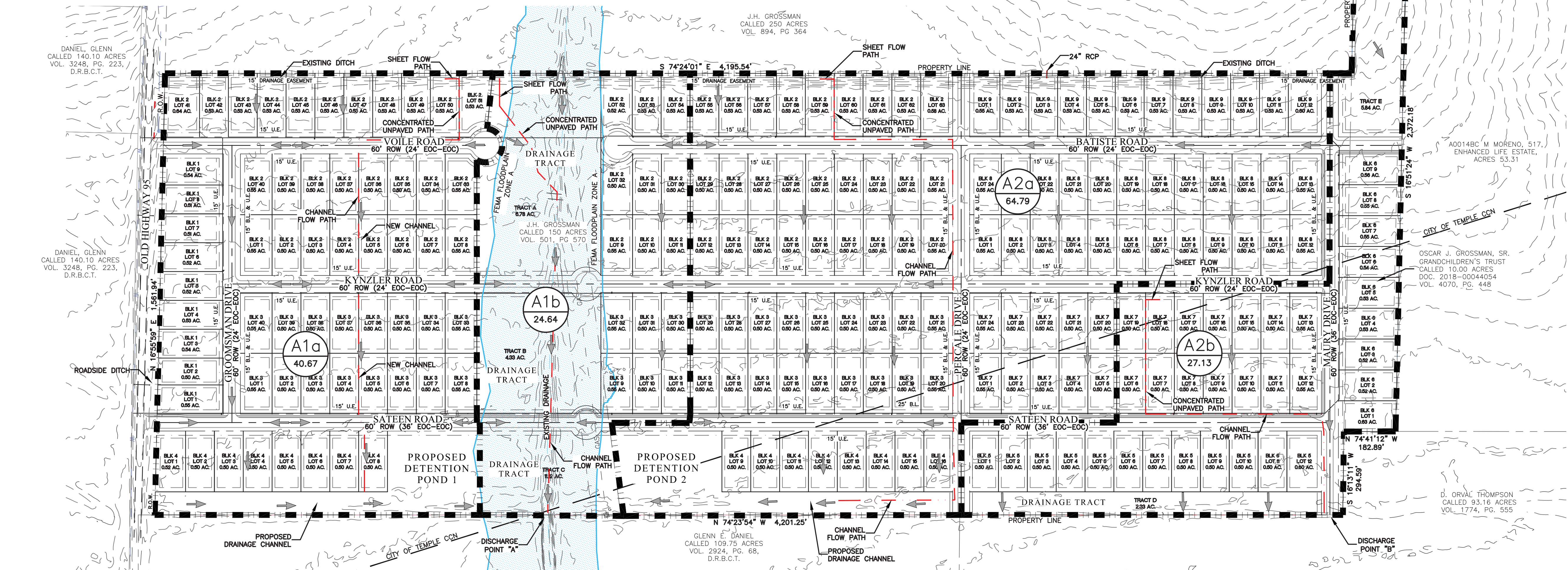
- BASED ON INFORMATION AVAILABLE FROM THE FEMA FIRM RATE MAP NUMBERED 48027C0365E, DATED SEPTEMBER 26, 2008. A PORTION OF THE PROPERTY IS LOCATED WITHIN ZONE "X" AREAS OF MINIMAL FLOOD HAZARD AND A PORTION OF THIS PROPERTY IS LOCATED WITHIN SHADED ZONE "A" AREAS OF SPECIAL FLOOD HAZARD.
- ALL FLOODPLAIN AREAS SHALL BE VERIFIED BY A REGISTERED PROFESSIONAL LAND SURVEYOR AND BE DISPLAYED ACCURATELY ON PLANS. ALL DEVELOPMENT IN THE FLOODPLAIN WILL BE SUBJECT TO A HYDRAULIC STUDY BY A LICENSED ENGINEER, SURVEYOR, OR ARCHITECT ALONG WITH AN ELEVATION CERTIFICATE. ADDITIONAL INFORMATION PERTINENT TO THESE PLANS MAY ALSO BE SUBMITTED TO BE REVIEWED. ALL DRAINAGE DEVELOPMENT SHALL MEET THE DRAINAGE DESIGN CRITERIA STATED IN THE BELL COUNTY ENGINEERS SUBDIVISION REGULATIONS SECTIONS 203.6-DRAINAGE AND TOPOGRAPHY, SECTION 302-STREETS AND DRAINAGE, SECTION 307-DRAINAGE

STORM EVENT	"C" VALUES					
	2	5	10	25	50	100
IMPERVIOUS COVER	0.75	0.80	0.83	0.88	0.92	0.97
SF LOTS	0.32	0.34	0.36	0.41	0.44	0.48
GRASS AREAS	0.25	0.28	0.30	0.34	0.37	0.41

COMPOSITE "C" CALCULATION

COMPOSITE "C" =  $A1 \times C1 + A2 \times C2 + A3 \times C3$   
 $A1 + A2 + A3$

	A1a-POST	A1b-POST	A2a-POST	A2b-POST	A3-POST
COVER (ACRES)	2.37	1.38	4.40	2.21	0.00
IMPERVIOUS COVER	36.15	8.41	56.23	19.51	0.00
SF LOTS	2.15	14.87	4.16	5.11	3.28
GRASS AREAS					
<b>TOTAL</b>	<b>40.67</b>	<b>24.64</b>	<b>64.79</b>	<b>27.13</b>	<b>3.28</b>



**LEGEND**

- DRAINAGE DESIGN CRITERIA**
- XX AREA: DRAINAGE AREA DESIGNATION
- RATIONAL METHOD EQUATION:  $Q = (C) (I) (A)$
- DRAINAGE BASIN AREA DIVIDE
- DIRECTIONAL FLOW ARROW
- APPROXIMATE LIMITS OF FEMA FLOOD HAZARD ZONE AE, AS PER F.I.R.M. PANEL NO. 48027C0365E, DATED SEPTEMBER 26, 2008
- APPROXIMATE LIMITS OF FEMA FLOODWAY, AS PER F.I.R.M. PANEL NO. 48027C0365E, DATED SEPTEMBER 26, 2008

**NOTES**

- STORM DRAINAGE SHALL BE DESIGNED IN ACCORDANCE WITH THE CITY OF TEMPLE'S DRAINAGE ORDINANCE.

**CLARK ASSOCIATES**  
CIVIL ENGINEERING • DESIGN • PLANNING

**COTTON BOTTOM ESTATES**  
NEW RESIDENTIAL DEVELOPMENT  
TEMPLE, TX, BELL COUNTY, TEXAS

**POST-DEVELOPMENT DRAINAGE MAP**  
DRAWING STATUS

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DESIGNED: MLC  
DRAFTED: PRA  
PROJECT NO: 212309.00  
PLOT DATE: 4-1-2022

7



### Hydrograph Report

1

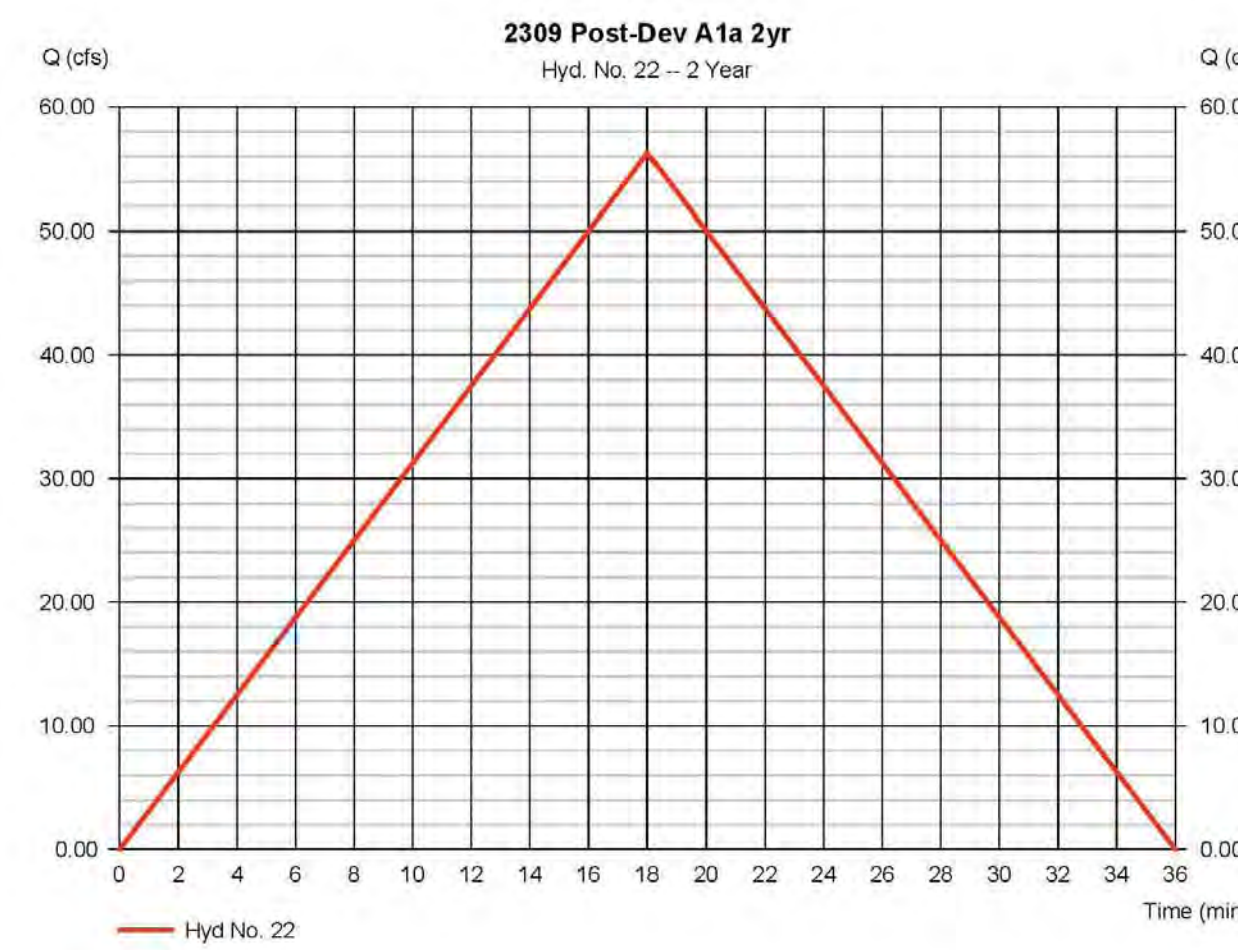
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 22

2309 Post-Dev A1a 2yr

Hydrograph type	= Rational	Peak discharge	= 58.24 cfs
Storm frequency	= 2 yrs	Time to peak	= 18 min
Time interval	= 1 min	Hyd. volume	= 60,744 cuft
Drainage area	= 40,670 ac	Runoff coeff.	= 0.34*
Intensity	= 4.067 in/hr	Tc by TR55	= 18.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(2,370 x 0.75) + (36,150 x 0.32) + (2,150 x 0.25)] / 40,670



### Hydrograph Report

14

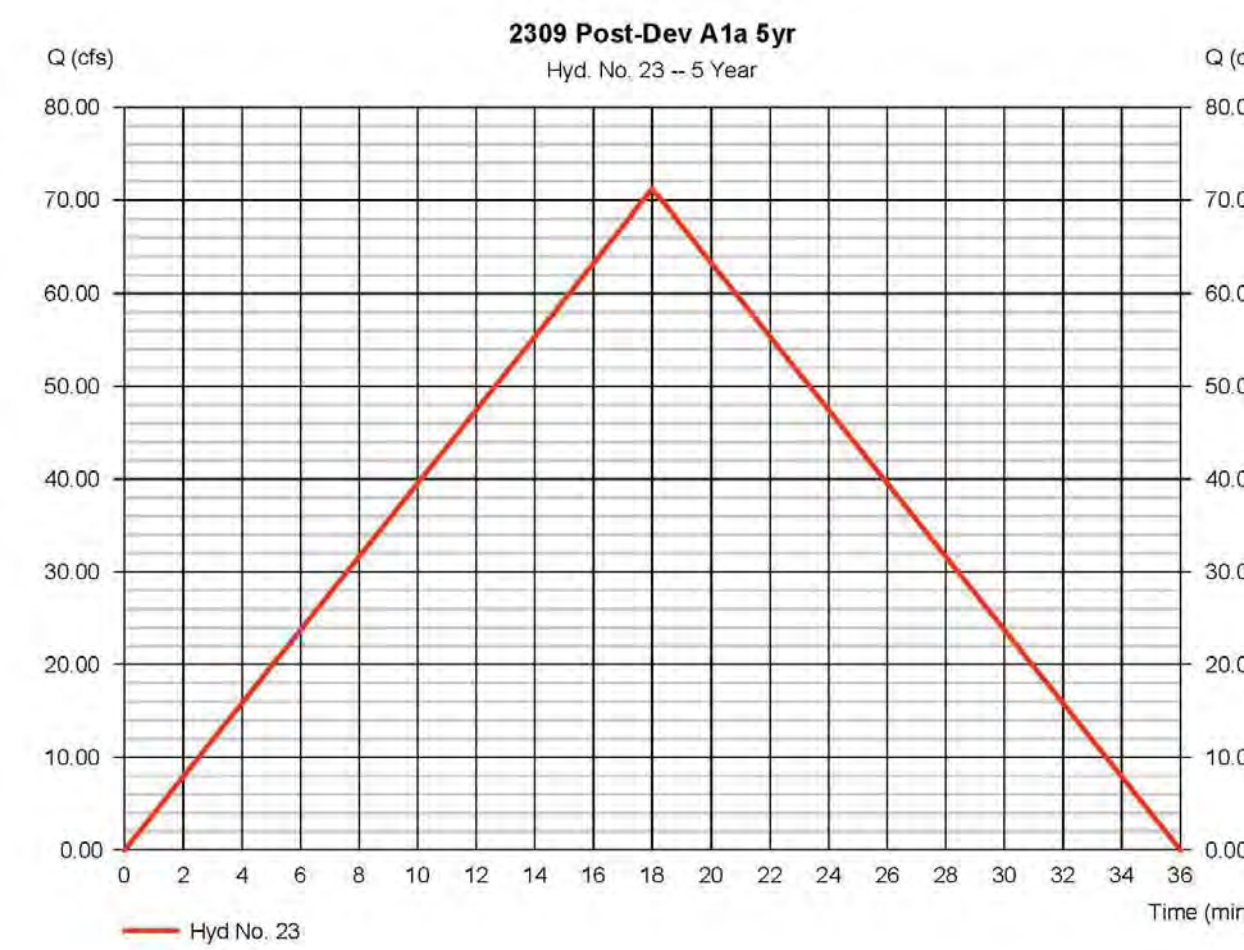
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 23

2309 Post-Dev A1a 5yr

Hydrograph type	= Rational	Peak discharge	= 71.17 cfs
Storm frequency	= 5 yrs	Time to peak	= 18 min
Time interval	= 1 min	Hyd. volume	= 76,863 cuft
Drainage area	= 40,670 ac	Runoff coeff.	= 0.36*
Intensity	= 4.861 in/hr	Tc by TR55	= 18.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(2,370 x 0.80) + (36,150 x 0.34) + (2,150 x 0.28)] / 40,670



### Hydrograph Report

21

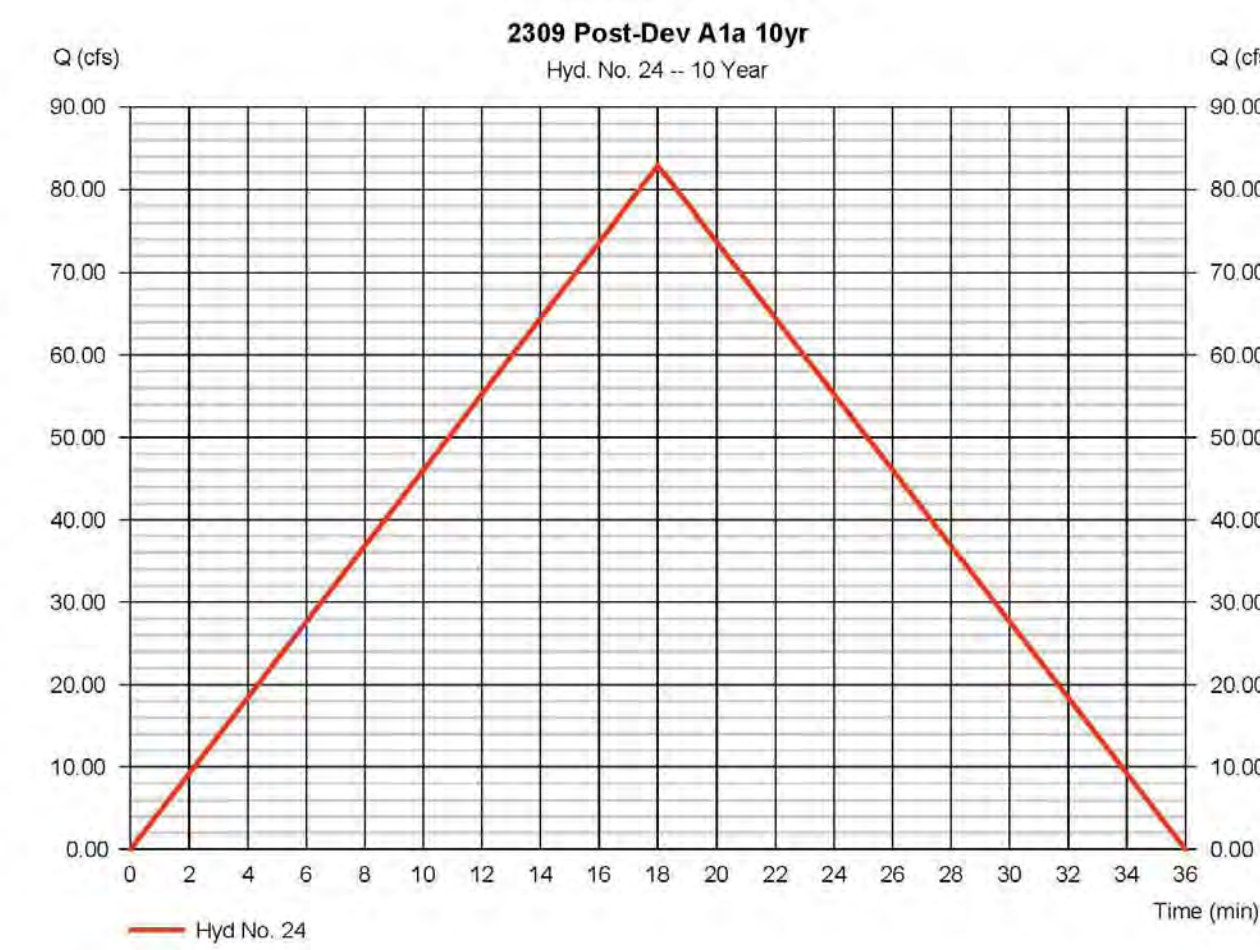
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 24

2309 Post-Dev A1a 10yr

Hydrograph type	= Rational	Peak discharge	= 82.84 cfs
Storm frequency	= 10 yrs	Time to peak	= 18 min
Time interval	= 1 min	Hyd. volume	= 89,465 cuft
Drainage area	= 40,670 ac	Runoff coeff.	= 0.38*
Intensity	= 5.360 in/hr	Tc by TR55	= 18.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(2,370 x 0.83) + (36,150 x 0.36) + (2,150 x 0.30)] / 40,670



### Hydrograph Report

28

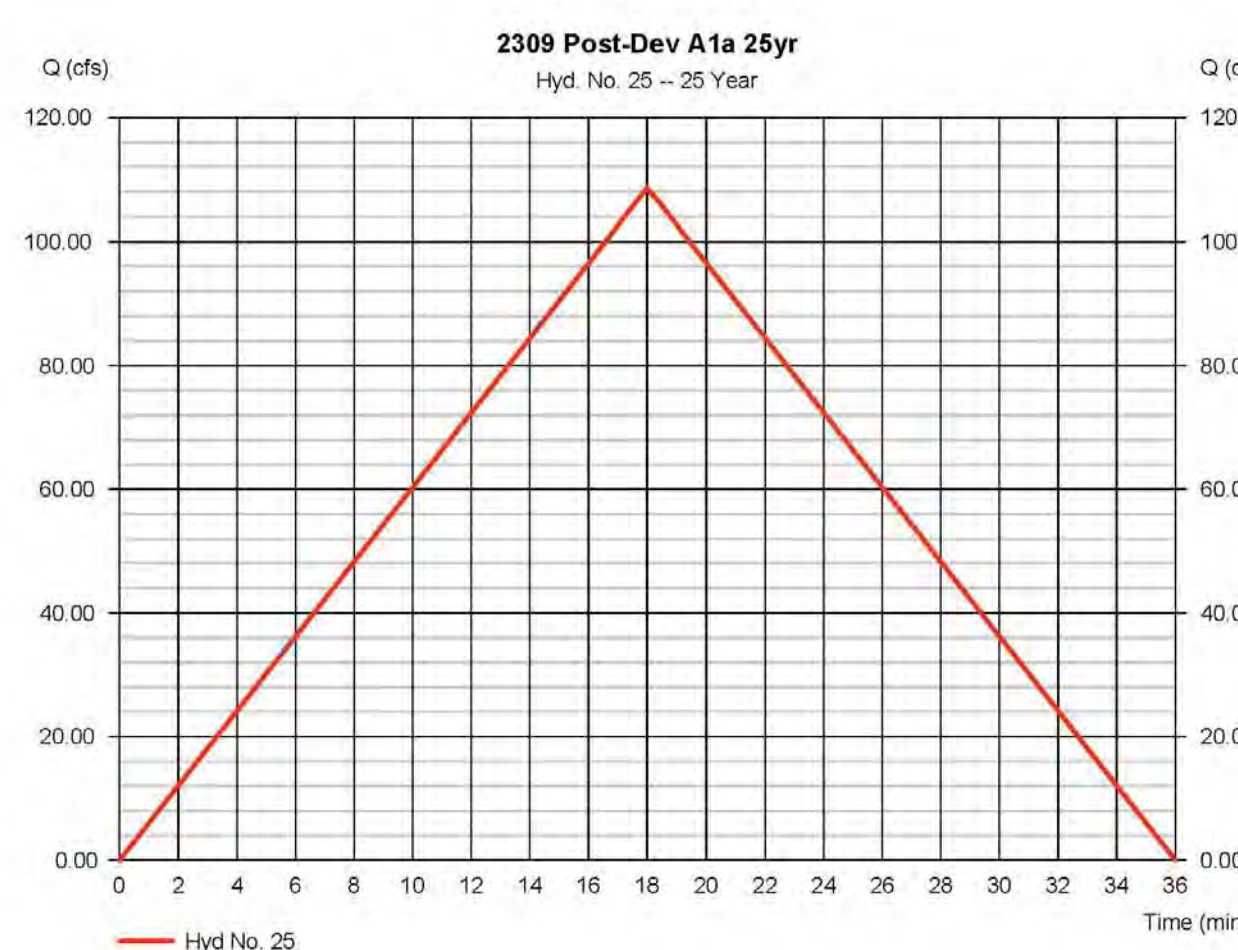
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 25

2309 Post-Dev A1a 25yr

Hydrograph type	= Rational	Peak discharge	= 108.58 cfs
Storm frequency	= 25 yrs	Time to peak	= 18 min
Time interval	= 1 min	Hyd. volume	= 117,270 cuft
Drainage area	= 40,670 ac	Runoff coeff.	= 0.43*
Intensity	= 6.209 in/hr	Tc by TR55	= 18.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(2,370 x 0.88) + (36,150 x 0.41) + (2,150 x 0.34)] / 40,670



### Hydrograph Report

42

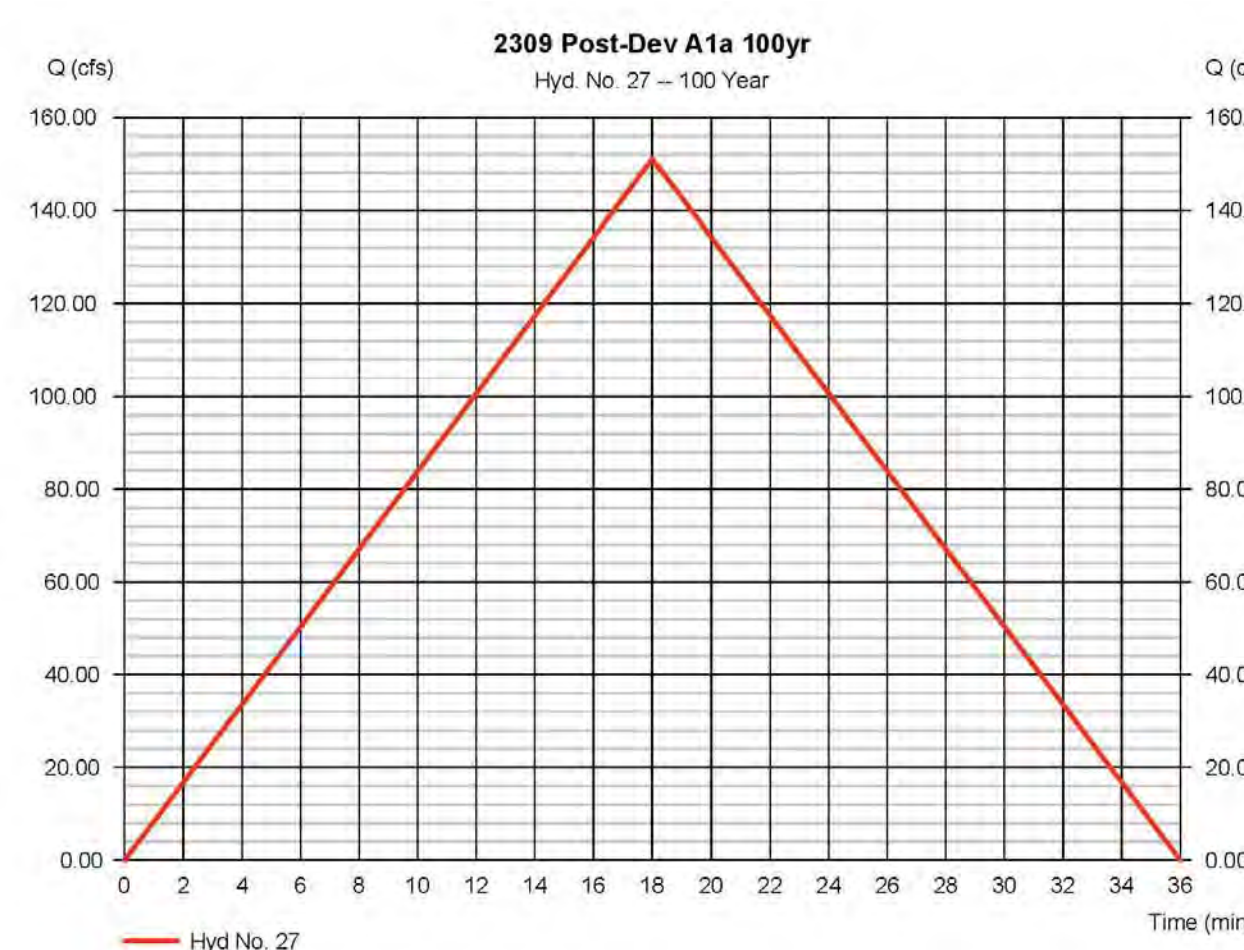
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 27

2309 Post-Dev A1a 100yr

Hydrograph type	= Rational	Peak discharge	= 150.97 cfs
Storm frequency	= 100 yrs	Time to peak	= 18 min
Time interval	= 1 min	Hyd. volume	= 163,048 cuft
Drainage area	= 40,670 ac	Runoff coeff.	= 0.5*
Intensity	= 7.424 in/hr	Tc by TR55	= 18.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(2,370 x 0.97) + (36,150 x 0.48) + (2,150 x 0.41)] / 40,670



### Hydrograph Report

42

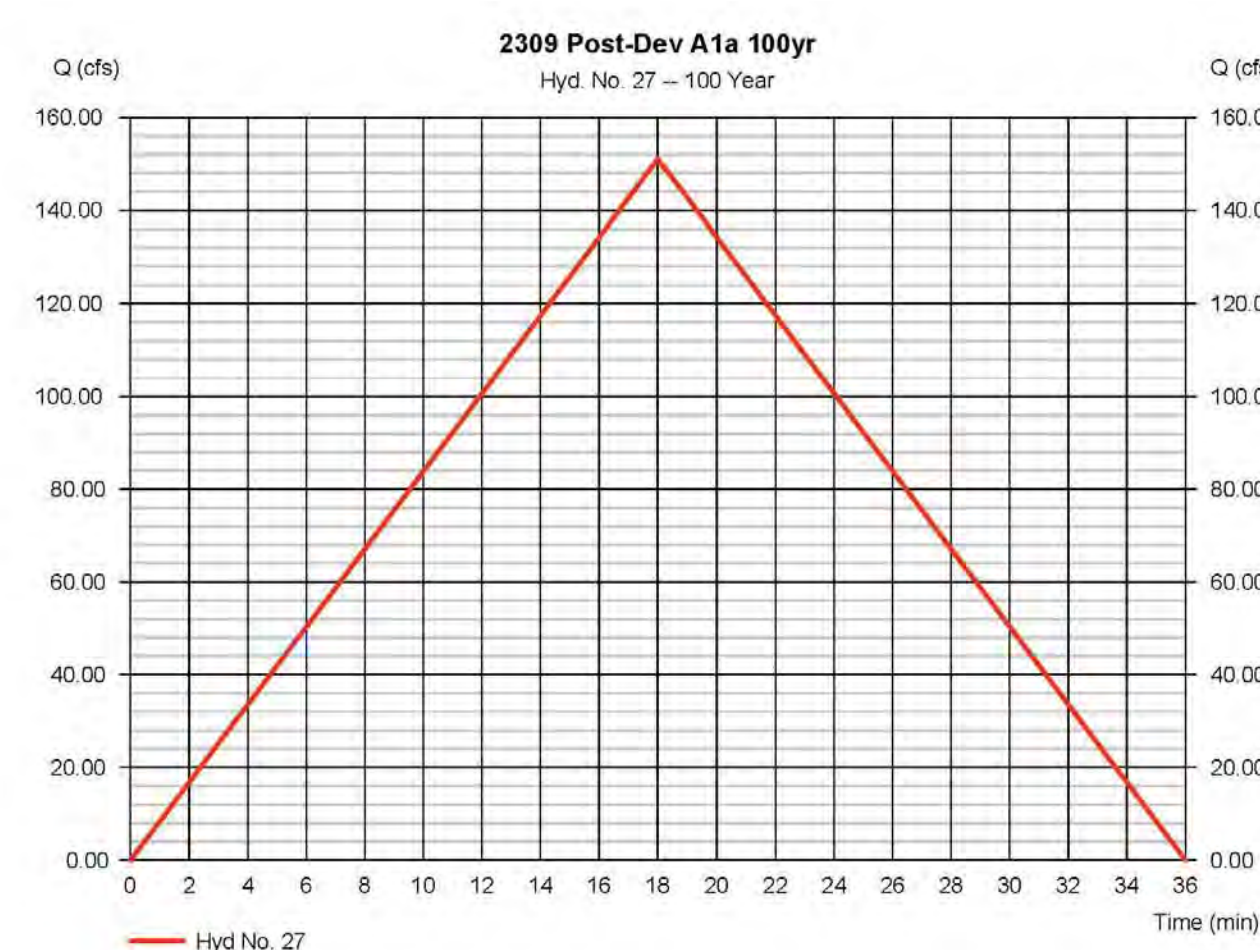
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 27

2309 Post-Dev A1a 100yr

Hydrograph type	= Rational	Peak discharge	= 150.97 cfs
Storm frequency	= 100 yrs	Time to peak	= 18 min
Time interval	= 1 min	Hyd. volume	= 163,048 cuft
Drainage area	= 40,670 ac	Runoff coeff.	= 0.5*
Intensity	= 7.424 in/hr	Tc by TR55	= 18.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(2,370 x 0.97) + (36,150 x 0.48) + (2,150 x 0.41)] / 40,670



## 1 AREA 1a POST-DEV DRAINAGE CALCULATIONS RATIONAL METHOD



### COTTON BOTTOM ESTATES NEW RESIDENTIAL DEVELOPMENT

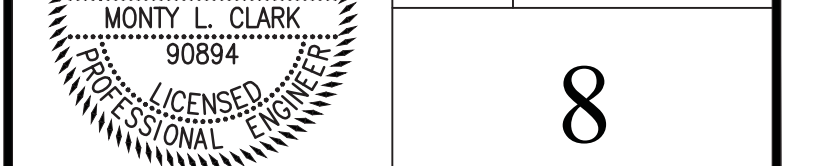
TEMPLE, TX,  
BELL COUNTY, TEXAS

### POST-DEVELOPMENT DRAINAGE CALCULATIONS SHEET 1

#### DRAWING STATUS

THESE DRAWINGS WERE PREPARED UNDER THE AUTHORITY OF MONTY L. CLARK, P.E. 90894, CLARK ASSOCIATES PLLC FIRM NO.: F-23184.  
 FOR REVIEW  
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 FOR CONSTRUCTION  
 FINAL DRAWINGS

Designed	MLC
Drafted	PRA
Project No	212309.00
Plot Date	4-1-2022



8



### Hydrograph Report

1

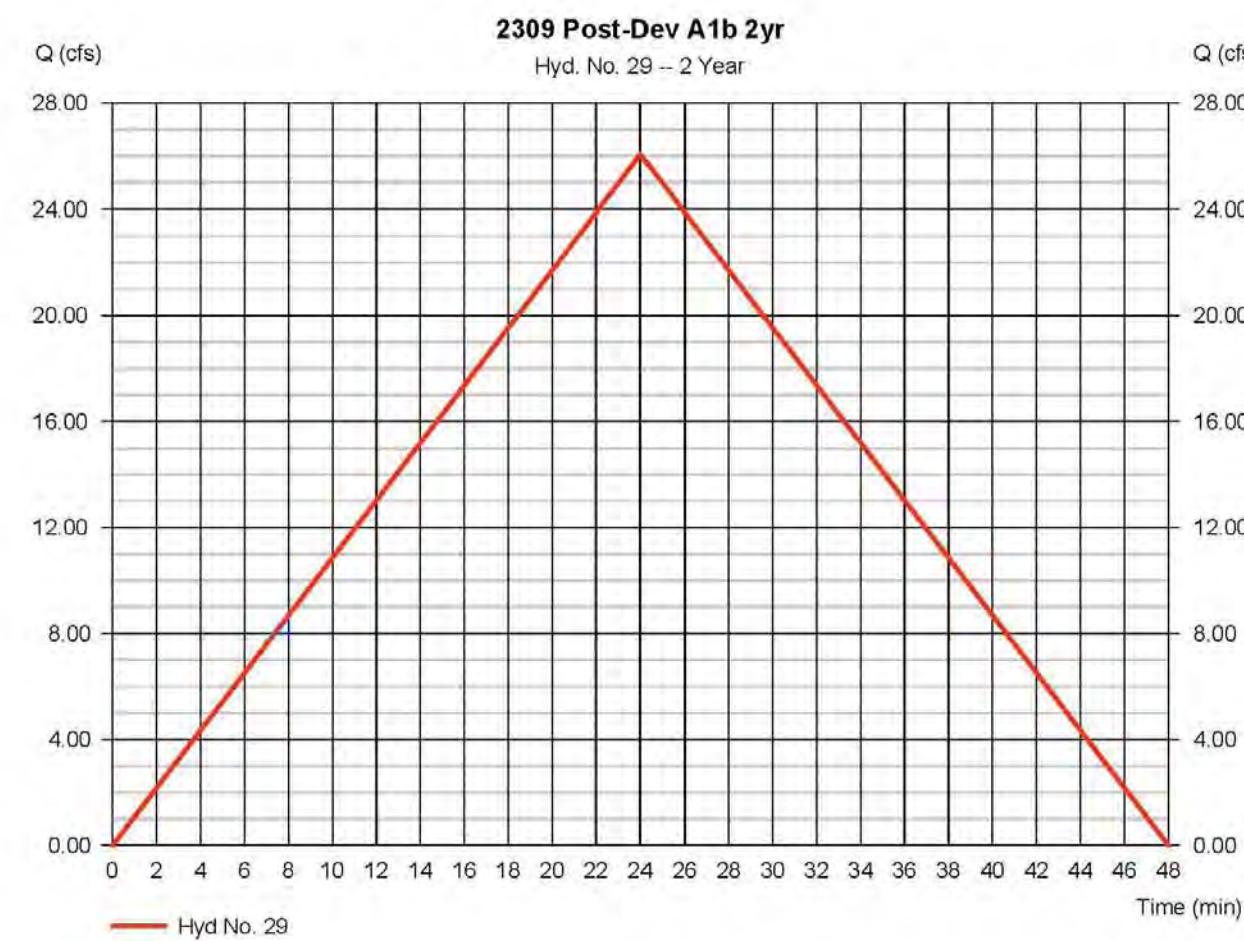
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 29

2309 Post-Dev A1b 2yr

Hydrograph type	= Rational	Peak discharge	= 26.04 cfs
Storm frequency	= 2 yrs	Time to peak	= 24 min
Time interval	= 1 min	Hyd. volume	= 37,505 cuft
Drainage area	= 24,640 ac	Runoff coeff.	= 0.3*
Intensity	= 3.523 in/hr	Tc by TR55	= 24.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(1,380 x 0.75) + (8,410 x 0.32) + (14,870 x 0.25)] / 24,640



### Hydrograph Report

14

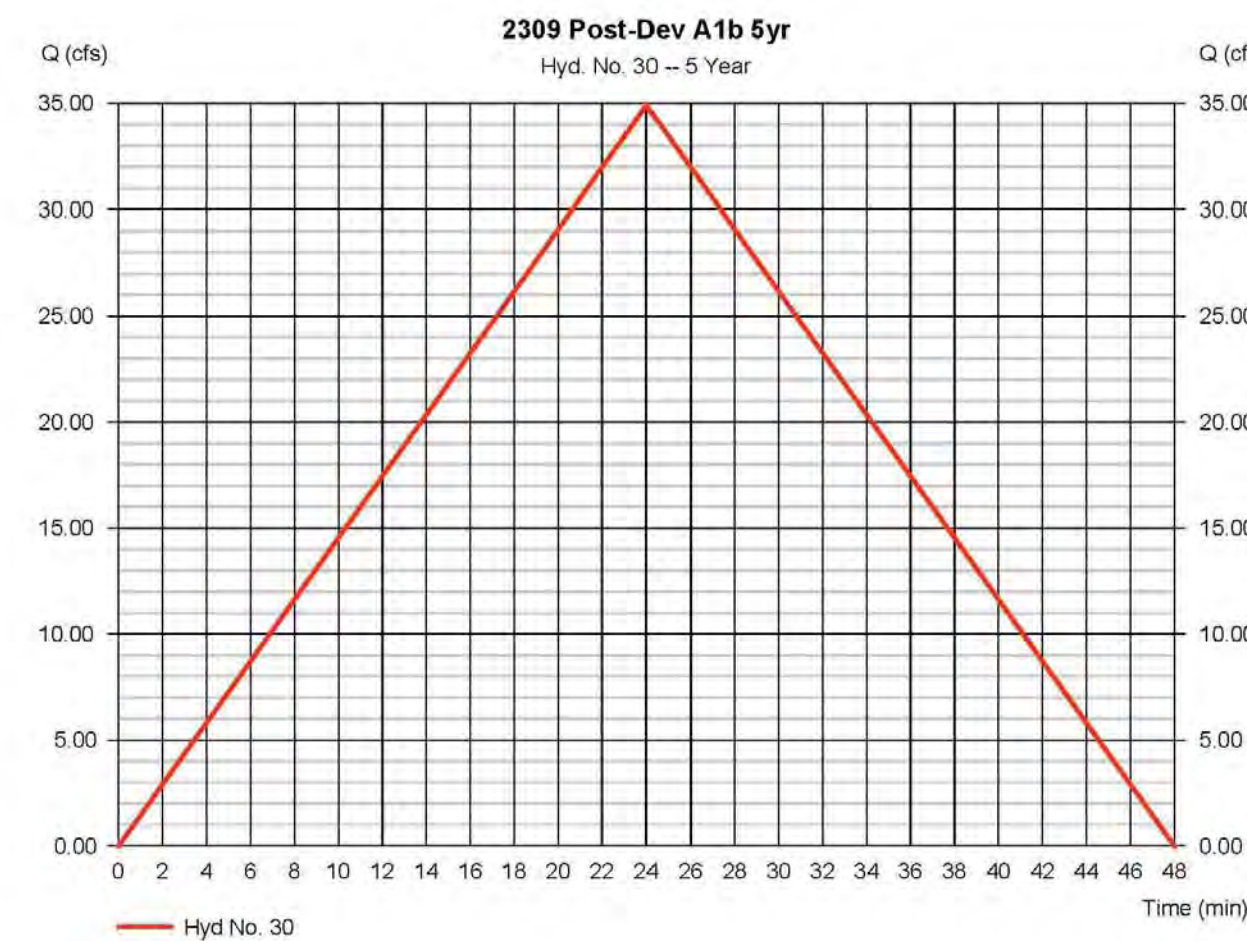
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 30

2309 Post-Dev A1b 5yr

Hydrograph type	= Rational	Peak discharge	= 34.88 cfs
Storm frequency	= 5 yrs	Time to peak	= 24 min
Time interval	= 1 min	Hyd. volume	= 50,228 cuft
Drainage area	= 24,640 ac	Runoff coeff.	= 0.33*
Intensity	= 4.290 in/hr	Tc by TR55	= 24.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(1,380 x 0.80) + (8,410 x 0.34) + (14,870 x 0.28)] / 24,640



### Hydrograph Report

21

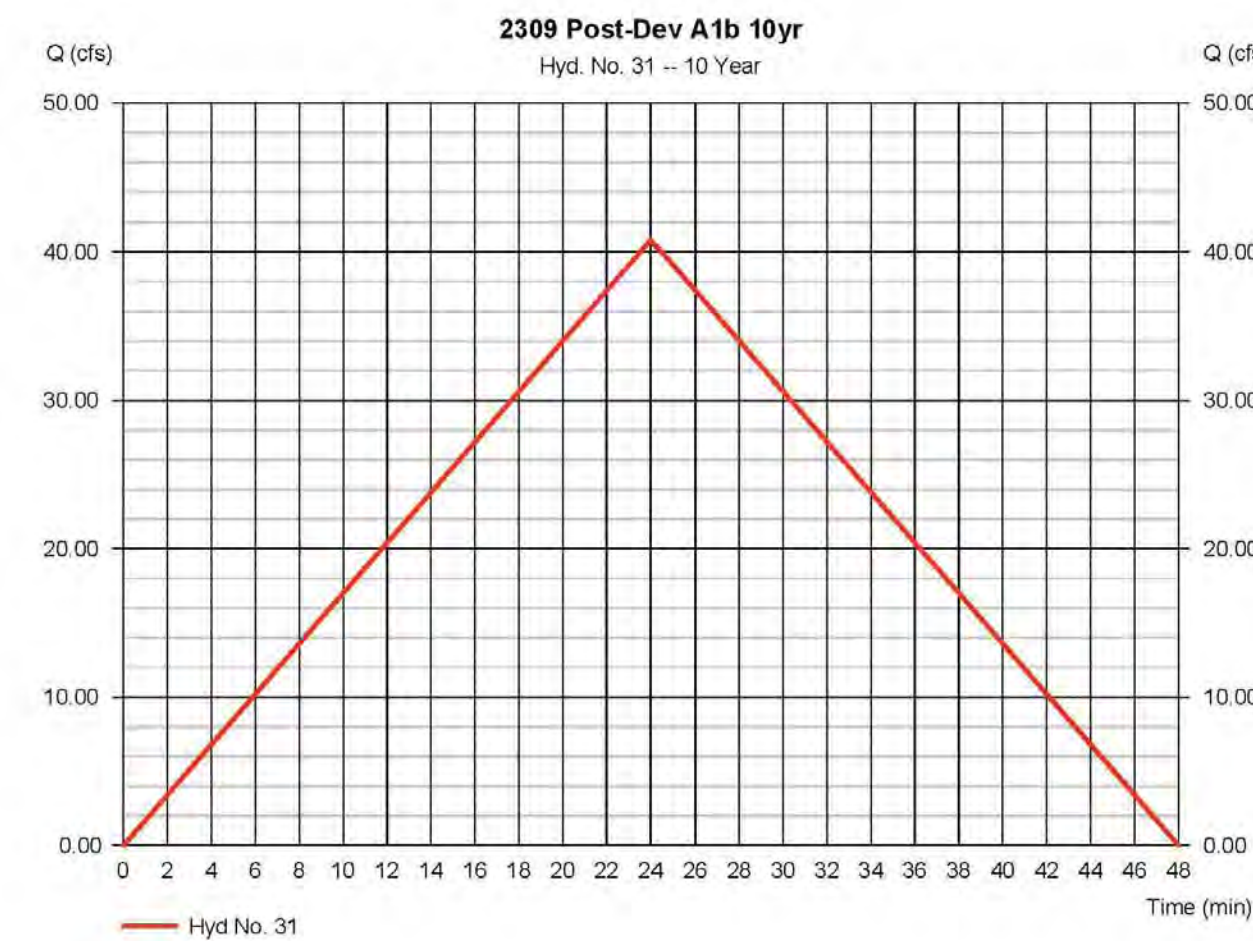
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 31

2309 Post-Dev A1b 10yr

Hydrograph type	= Rational	Peak discharge	= 40.79 cfs
Storm frequency	= 10 yrs	Time to peak	= 24 min
Time interval	= 1 min	Hyd. volume	= 58,744 cuft
Drainage area	= 24,640 ac	Runoff coeff.	= 0.35*
Intensity	= 4.730 in/hr	Tc by TR55	= 24.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(1,380 x 0.83) + (8,410 x 0.35) + (14,870 x 0.30)] / 24,640



### Hydrograph Report

28

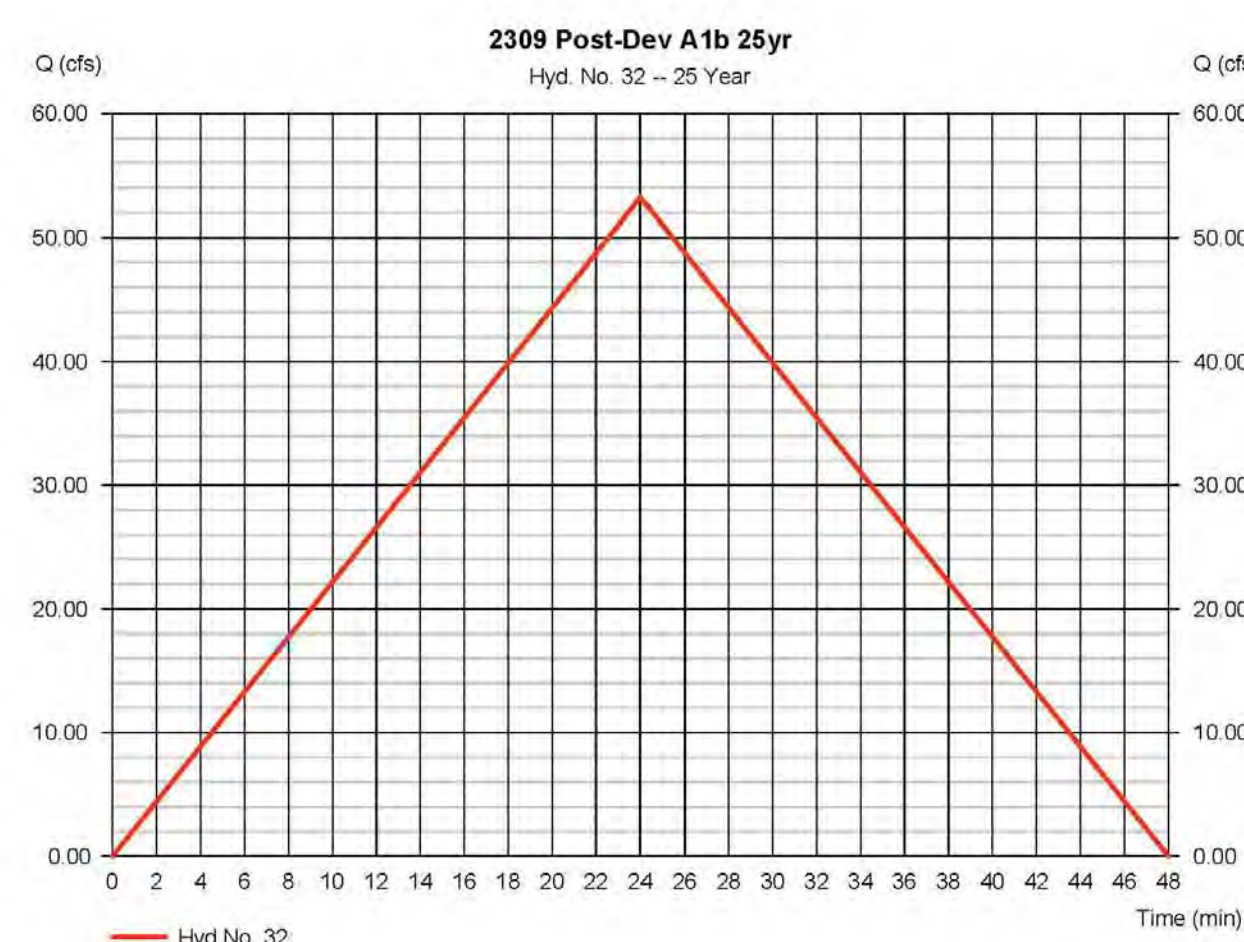
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 32

2309 Post-Dev A1b 25yr

Hydrograph type	= Rational	Peak discharge	= 53.20 cfs
Storm frequency	= 25 yrs	Time to peak	= 24 min
Time interval	= 1 min	Hyd. volume	= 76,603 cuft
Drainage area	= 24,640 ac	Runoff coeff.	= 0.39*
Intensity	= 5.536 in/hr	Tc by TR55	= 24.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(1,380 x 0.88) + (8,410 x 0.41) + (14,870 x 0.34)] / 24,640



### Hydrograph Report

35

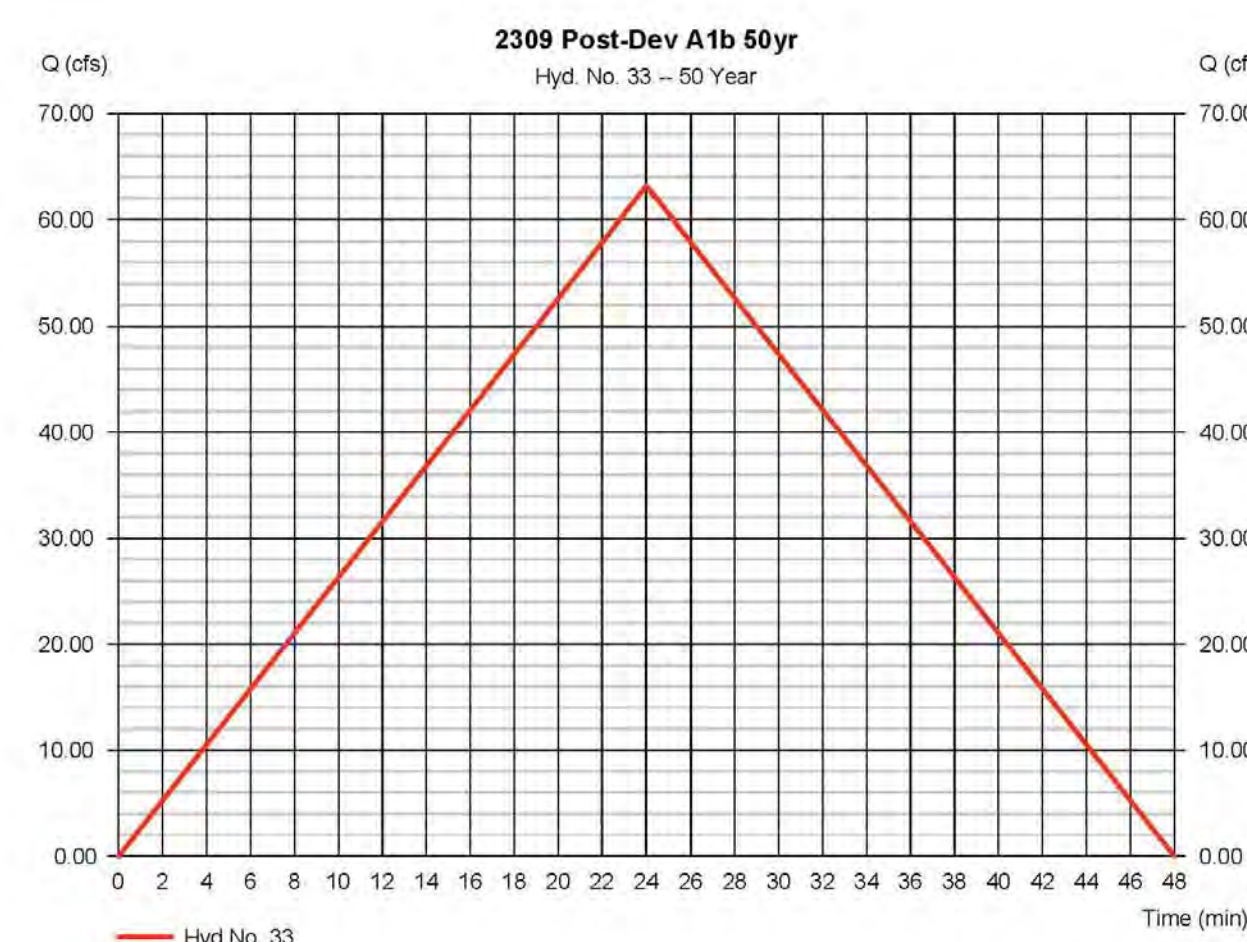
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 33

2309 Post-Dev A1b 50yr

Hydrograph type	= Rational	Peak discharge	= 63.15 cfs
Storm frequency	= 50 yrs	Time to peak	= 24 min
Time interval	= 1 min	Hyd. volume	= 90,936 cuft
Drainage area	= 24,640 ac	Runoff coeff.	= 0.42*
Intensity	= 6.102 in/hr	Tc by TR55	= 24.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(1,380 x 0.92) + (8,410 x 0.44) + (14,870 x 0.37)] / 24,640



### Hydrograph Report

42

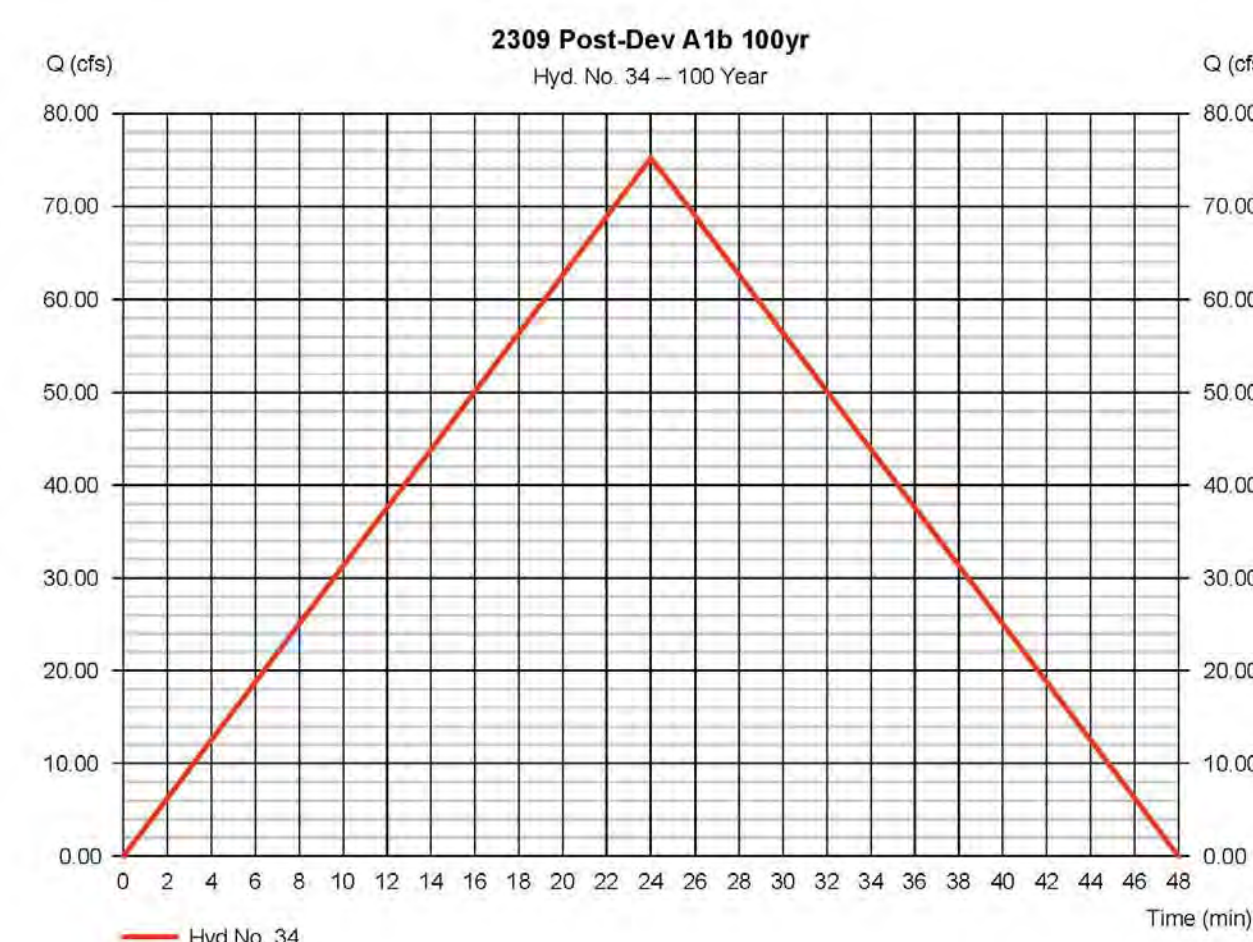
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 34

2309 Post-Dev A1b 100yr

Hydrograph type	= Rational	Peak discharge	= 75.17 cfs
Storm frequency	= 100 yrs	Time to peak	= 24 min
Time interval	= 1 min	Hyd. volume	= 108,250 cuft
Drainage area	= 24,640 ac	Runoff coeff.	= 0.46*
Intensity	= 6.632 in/hr	Tc by TR55	= 24.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(1,380 x 0.97) + (8,410 x 0.48) + (14,870 x 0.41)] / 24,640



## 2 AREA 1b POST-DEV DRAINAGE CALCULATIONS RATIONAL METHOD



**COTTON BOTTOM ESTATES**  
NEW RESIDENTIAL DEVELOPMENT

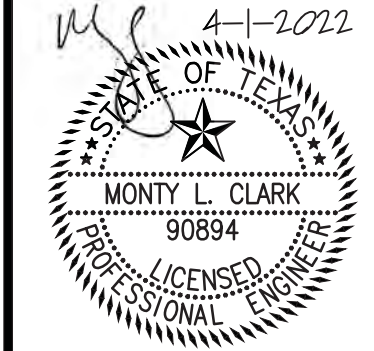
TEMPLE, TX,  
BELL COUNTY, TEXAS

POST-DEVELOPMENT  
DRAINAGE CALCULATIONS  
SHEET 2

#### DRAWING STATUS

THESE DRAWINGS WERE PREPARED UNDER THE AUTHORITY OF MONTY L. CLARK, P.E. 90894, CLARK ASSOCIATES PLLC FIRM NO.: F-23184.  
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 FOR CONSTRUCTION  
 FINAL DRAWINGS

Designed	MLC
Drafted	PRA
Project No	212309.00
Plot Date	4-1-2022



9



### Hydrograph Report

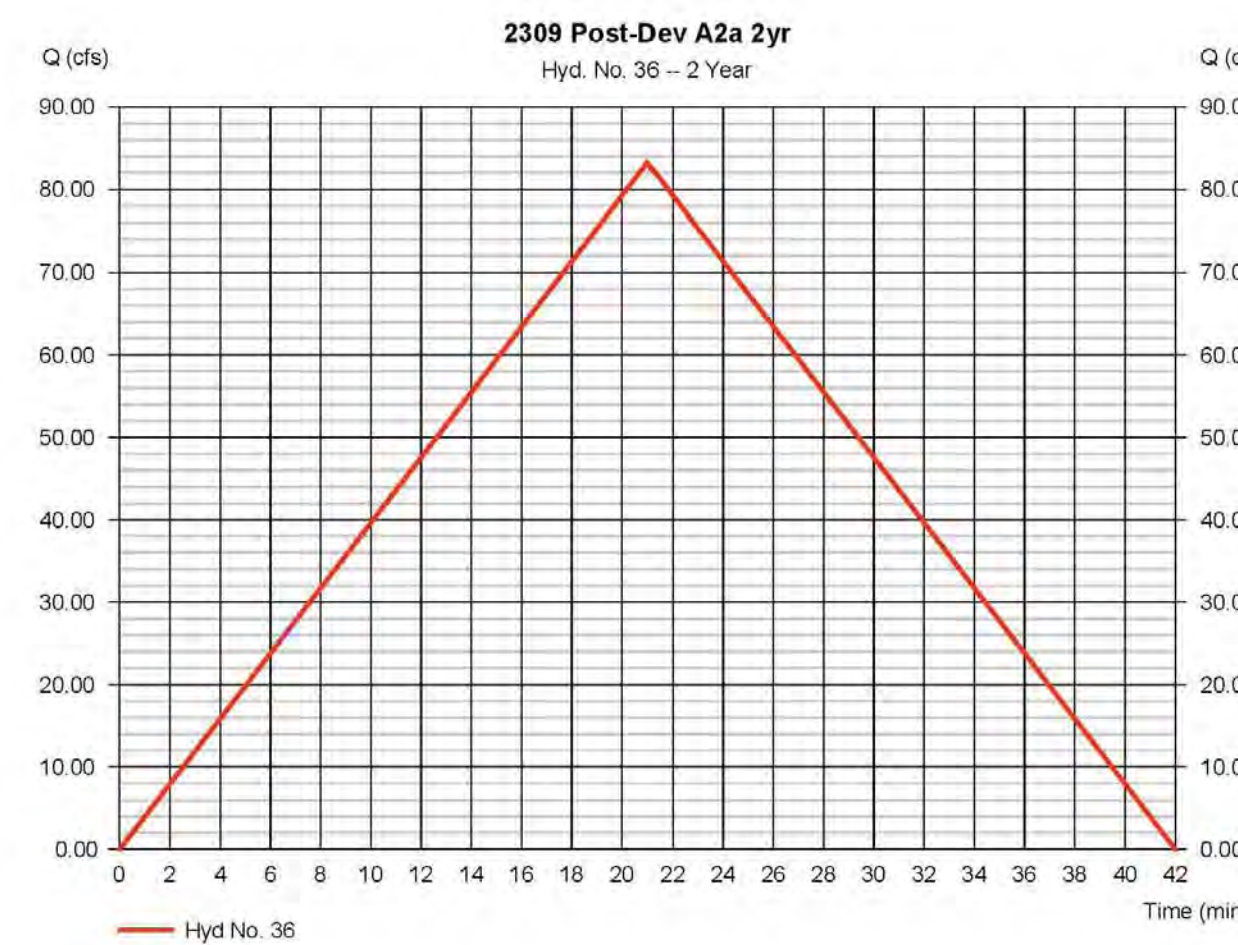
1

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

**Hyd. No. 36**  
2309 Post-Dev A2a 2yr

Hydrograph type	= Rational	Peak discharge	= 83.21 cfs
Storm frequency	= 2 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 104,846 cuft
Drainage area	= 64,790 ac	Runoff coeff.	= 0.34*
Intensity	= 3.777 in/hr	Tc by User	= 21.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(4,400 x 0.75) + (56,230 x 0.32) + (4,160 x 0.28)] / 64,790



### Hydrograph Report

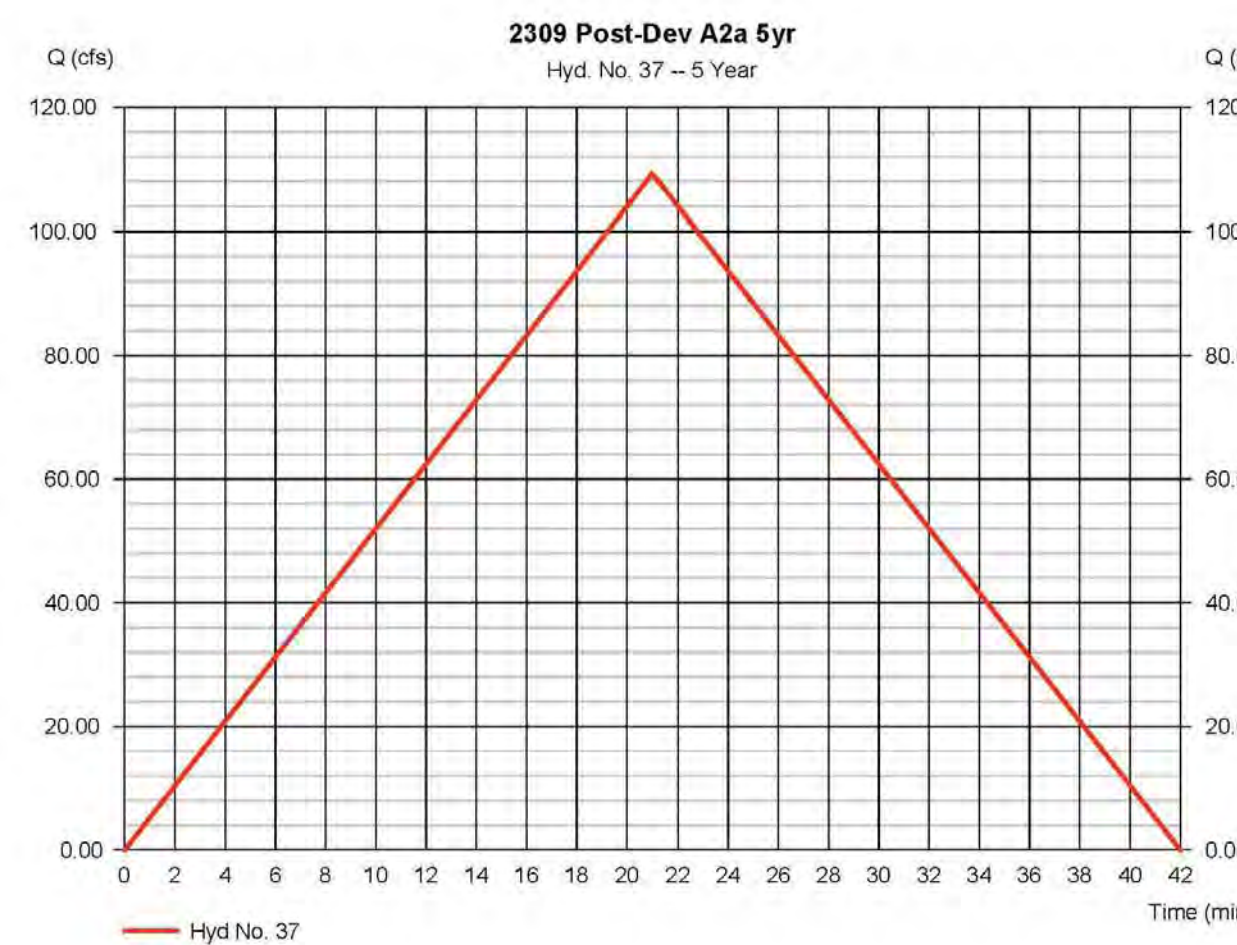
9

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

**Hyd. No. 37**  
2309 Post-Dev A2a 5yr

Hydrograph type	= Rational	Peak discharge	= 109.20 cfs
Storm frequency	= 5 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 137,594 cuft
Drainage area	= 64,790 ac	Runoff coeff.	= 0.37*
Intensity	= 4.555 in/hr	Tc by User	= 21.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(4,400 x 0.80) + (56,230 x 0.34) + (4,160 x 0.28)] / 64,790



### Hydrograph Report

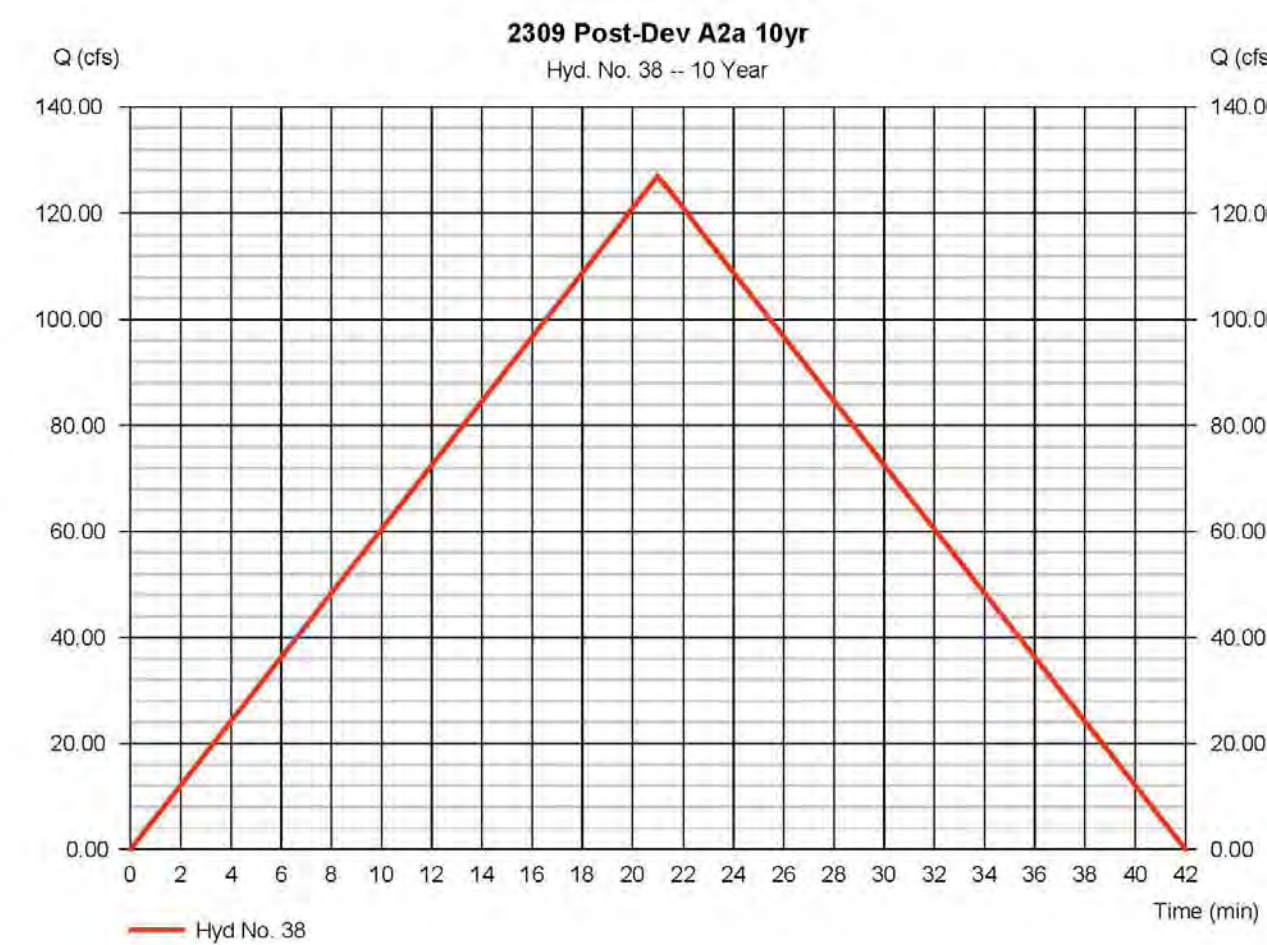
16

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

**Hyd. No. 38**  
2309 Post-Dev A2a 10yr

Hydrograph type	= Rational	Peak discharge	= 126.90 cfs
Storm frequency	= 10 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 159,898 cuft
Drainage area	= 64,790 ac	Runoff coeff.	= 0.39*
Intensity	= 5.022 in/hr	Tc by User	= 21.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(4,400 x 0.83) + (56,230 x 0.36) + (4,160 x 0.30)] / 64,790



### Hydrograph Report

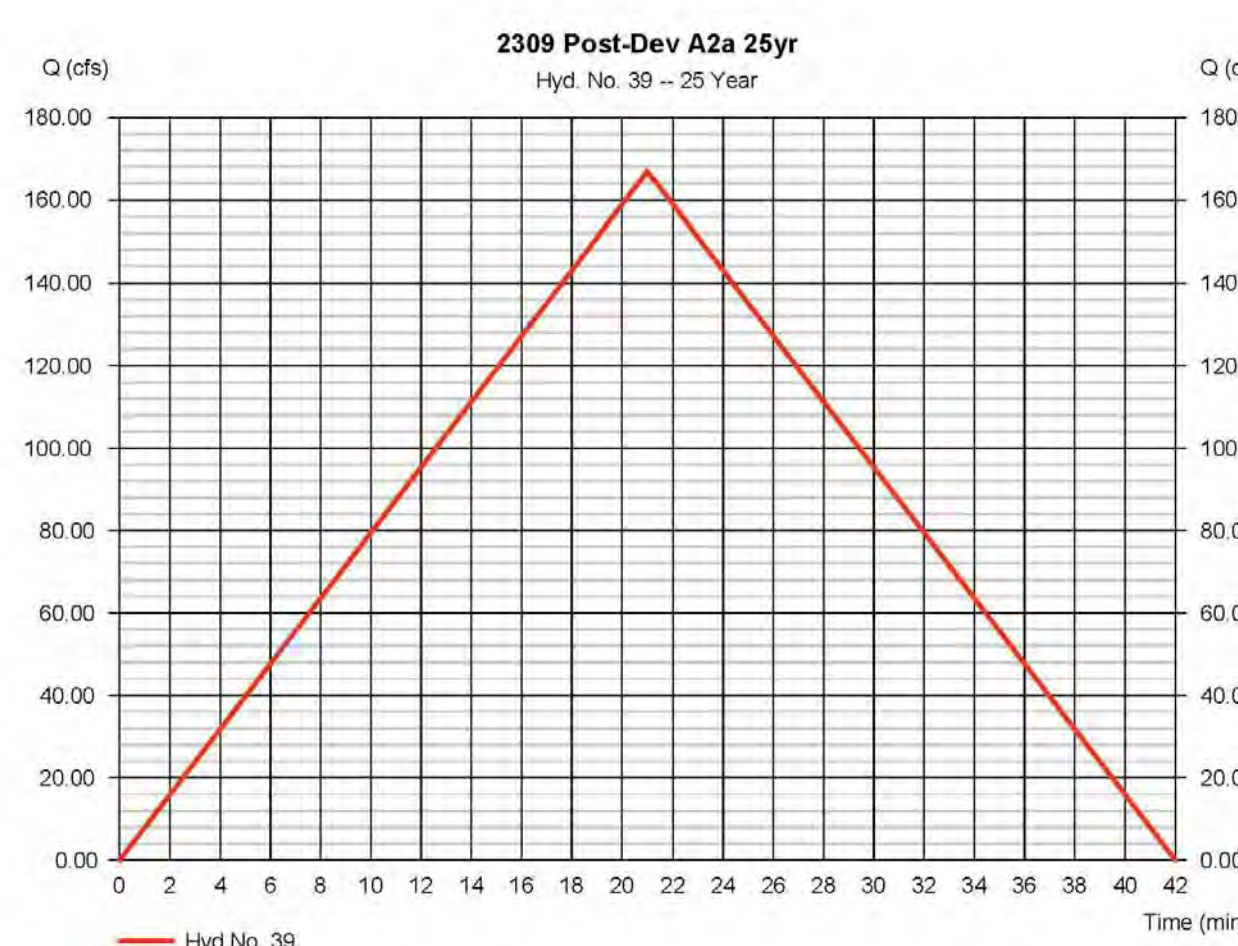
23

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

**Hyd. No. 39**  
2309 Post-Dev A2a 25yr

Hydrograph type	= Rational	Peak discharge	= 166.83 cfs
Storm frequency	= 25 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 210,202 cuft
Drainage area	= 64,790 ac	Runoff coeff.	= 0.44*
Intensity	= 5.852 in/hr	Tc by User	= 21.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(4,400 x 0.88) + (56,230 x 0.41) + (4,160 x 0.34)] / 64,790



### Hydrograph Report

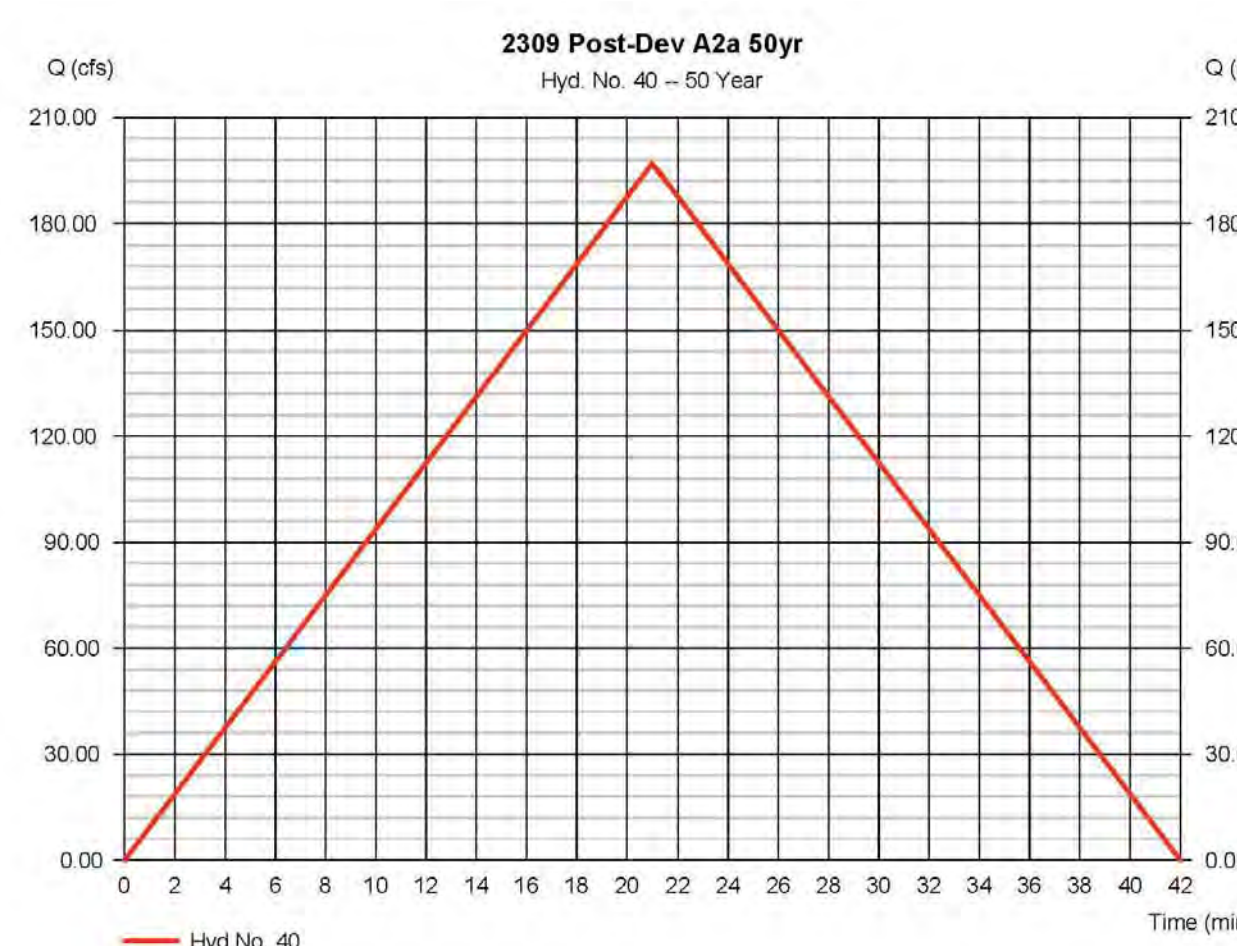
30

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

**Hyd. No. 40**  
2309 Post-Dev A2a 50yr

Hydrograph type	= Rational	Peak discharge	= 196.82 cfs
Storm frequency	= 50 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 247,988 cuft
Drainage area	= 64,790 ac	Runoff coeff.	= 0.47*
Intensity	= 6.463 in/hr	Tc by User	= 21.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(4,400 x 0.92) + (56,230 x 0.44) + (4,160 x 0.37)] / 64,790



### Hydrograph Report

37

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

**Hyd. No. 41**  
2309 Post-Dev A2a 100yr

Hydrograph type	= Rational	Peak discharge	= 231.46 cfs
Storm frequency	= 100 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 291,634 cuft
Drainage area	= 64,790 ac	Runoff coeff.	= 0.51*
Intensity	= 7.005 in/hr	Tc by User	= 21.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(4,400 x 0.97) + (56,230 x 0.48) + (4,160 x 0.41)] / 64,790



## 3 AREA 2a POST-DEV DRAINAGE CALCULATIONS RATIONAL METHOD



### COTTON BOTTOM ESTATES NEW RESIDENTIAL DEVELOPMENT

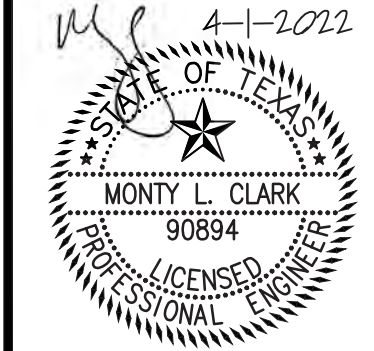
TEMPLE, TX,  
BELL COUNTY, TEXAS

### POST-DEVELOPMENT DRAINAGE CALCULATIONS SHEET 3

#### DRAWING STATUS

THESE DRAWINGS WERE PREPARED UNDER THE AUTHORITY OF MONTY L. CLARK, P.E. 90894, CLARK ASSOCIATES PLLC FIRM NO.: F-23184.  
 FOR REVIEW  
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 FOR CONSTRUCTION  
 FINAL DRAWINGS

Designed	MLC
Drafted	PRA
Project No	212309.00
Plot Date	4-1-2022





### Hydrograph Report

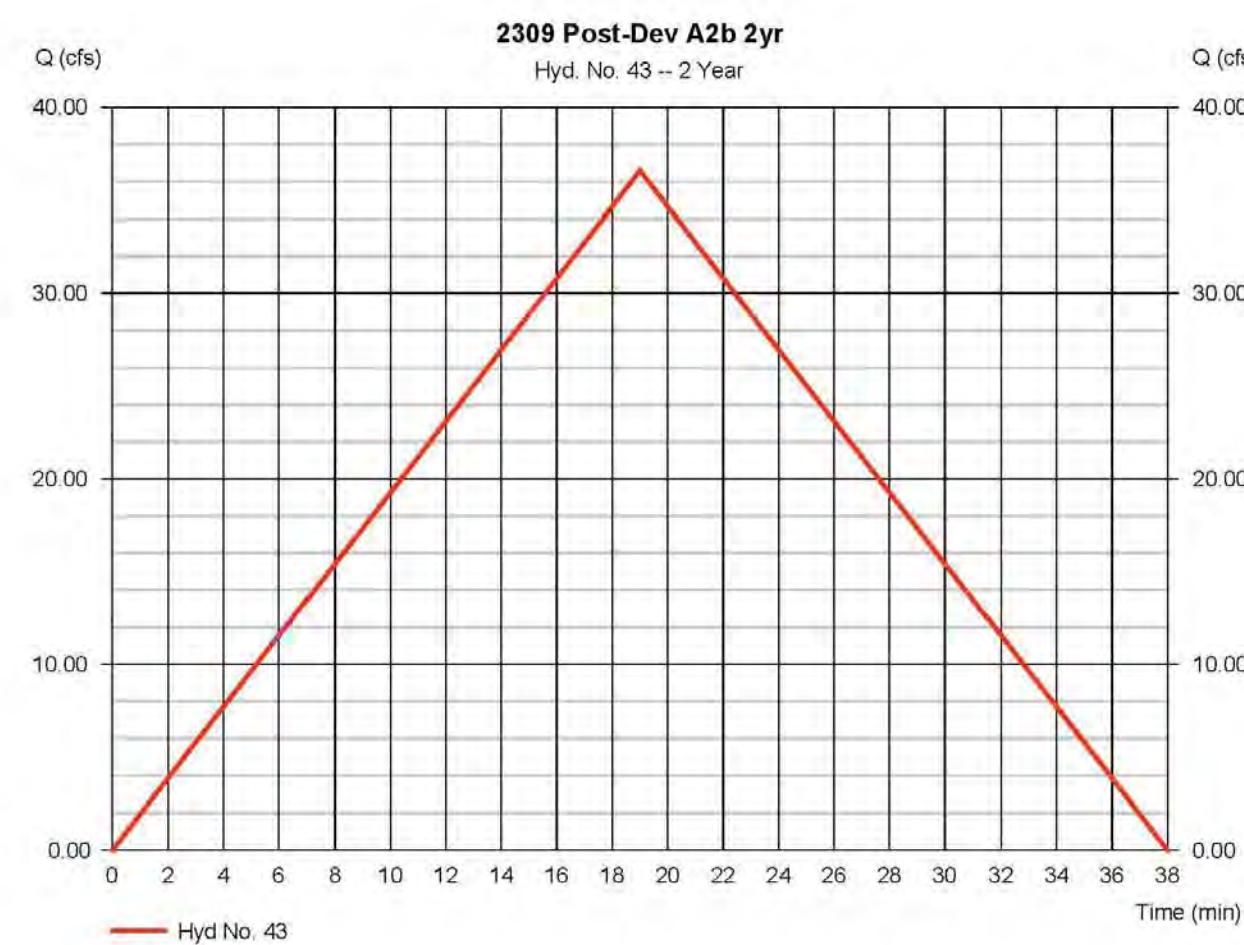
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 43

2309 Post-Dev A2b 2yr

Hydrograph type	= Rational	Peak discharge	= 36.59 cfs
Storm frequency	= 2 yrs	Time to peak	= 19 min
Time interval	= 1 min	Hyd. volume	= 41,709 cuft
Drainage area	= 27,130 ac	Runoff coeff.	= 0.34*
Intensity	= 3.966 in/hr	Tc by User	= 19.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(2,210 x 0.75) + (19,810 x 0.32) + (5,110 x 0.25)] / 27,130



### Hydrograph Report

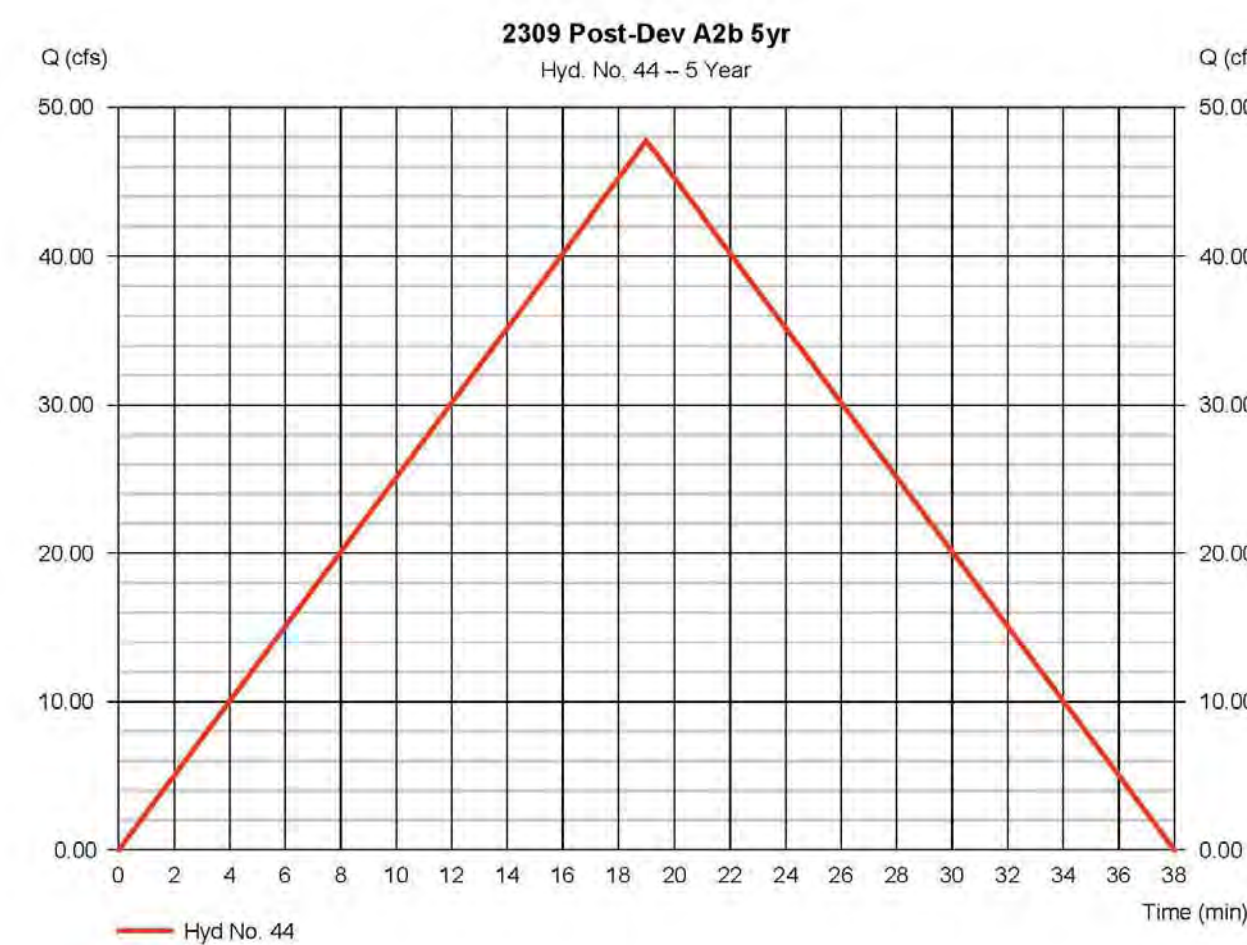
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 44

2309 Post-Dev A2b 5yr

Hydrograph type	= Rational	Peak discharge	= 47.72 cfs
Storm frequency	= 5 yrs	Time to peak	= 19 min
Time interval	= 1 min	Hyd. volume	= 54,402 cuft
Drainage area	= 27,130 ac	Runoff coeff.	= 0.37*
Intensity	= 4.754 in/hr	Tc by User	= 19.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(2,210 x 0.80) + (19,810 x 0.34) + (5,110 x 0.28)] / 27,130



### Hydrograph Report

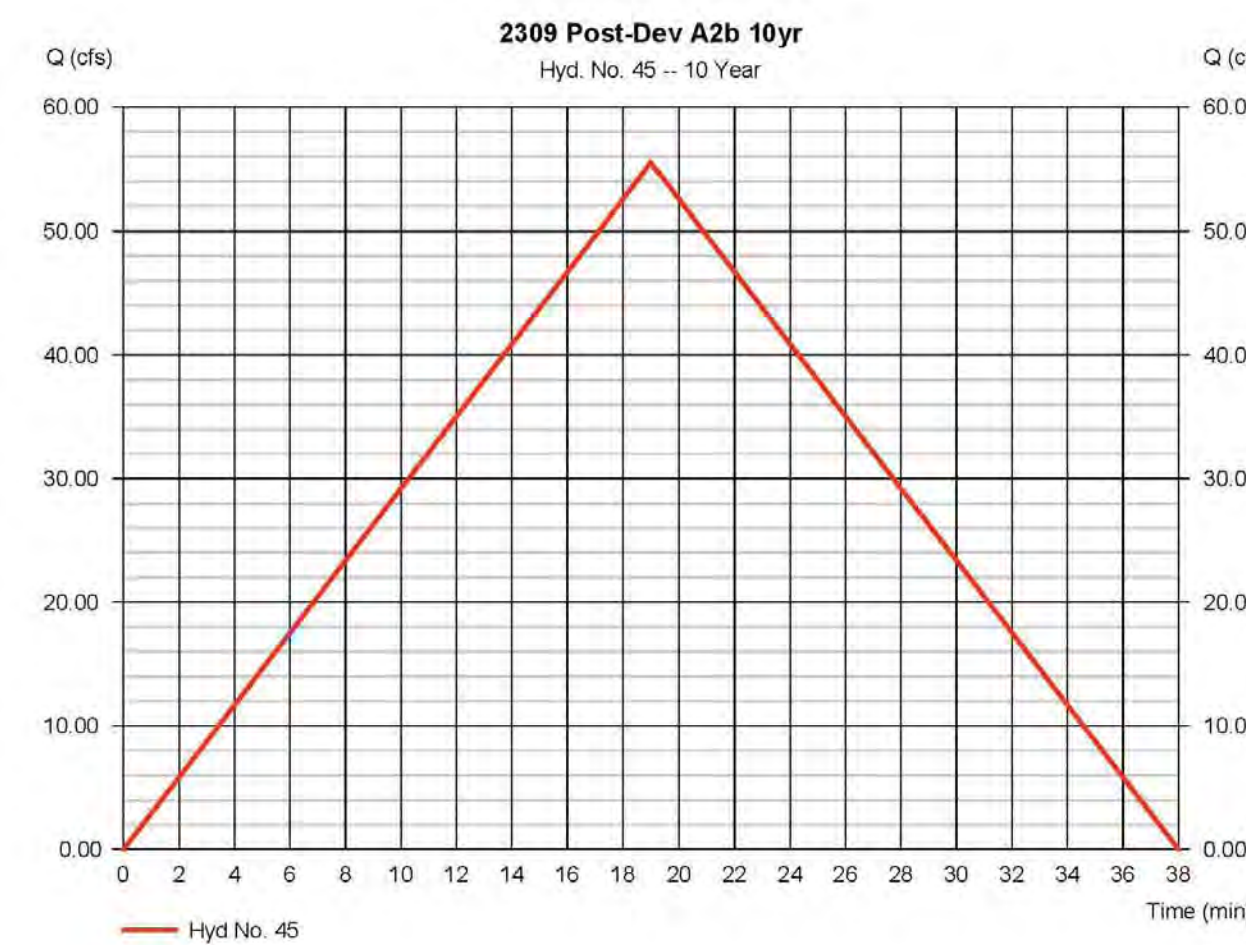
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 45

2309 Post-Dev A2b 10yr

Hydrograph type	= Rational	Peak discharge	= 55.46 cfs
Storm frequency	= 10 yrs	Time to peak	= 19 min
Time interval	= 1 min	Hyd. volume	= 63,225 cuft
Drainage area	= 27,130 ac	Runoff coeff.	= 0.39*
Intensity	= 5.242 in/hr	Tc by User	= 19.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(2,210 x 0.83) + (19,810 x 0.36) + (5,110 x 0.30)] / 27,130



### Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 46

2309 Post-Dev A2b 25yr

Hydrograph type	= Rational	Peak discharge	= 72.64 cfs
Storm frequency	= 25 yrs	Time to peak	= 19 min
Time interval	= 1 min	Hyd. volume	= 82,807 cuft
Drainage area	= 27,130 ac	Runoff coeff.	= 0.44*
Intensity	= 6.085 in/hr	Tc by User	= 19.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(2,210 x 0.88) + (19,810 x 0.41) + (5,110 x 0.34)] / 27,130



### Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 47

2309 Post-Dev A2b 50yr

Hydrograph type	= Rational	Peak discharge	= 85.84 cfs
Storm frequency	= 50 yrs	Time to peak	= 19 min
Time interval	= 1 min	Hyd. volume	= 97,862 cuft
Drainage area	= 27,130 ac	Runoff coeff.	= 0.47*
Intensity	= 6.732 in/hr	Tc by User	= 19.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(2,210 x 0.92) + (19,810 x 0.44) + (5,110 x 0.37)] / 27,130



### Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 48

2309 Post-Dev A2b 100yr

Hydrograph type	= Rational	Peak discharge	= 100.71 cfs
Storm frequency	= 100 yrs	Time to peak	= 19 min
Time interval	= 1 min	Hyd. volume	= 114,807 cuft
Drainage area	= 27,130 ac	Runoff coeff.	= 0.51*
Intensity	= 7.279 in/hr	Tc by User	= 19.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = [(2,210 x 0.97) + (19,810 x 0.48) + (5,110 x 0.41)] / 27,130



## 4 AREA 2b POST-DEV DRAINAGE CALCULATIONS RATIONAL METHOD



### COTTON BOTTOM ESTATES NEW RESIDENTIAL DEVELOPMENT

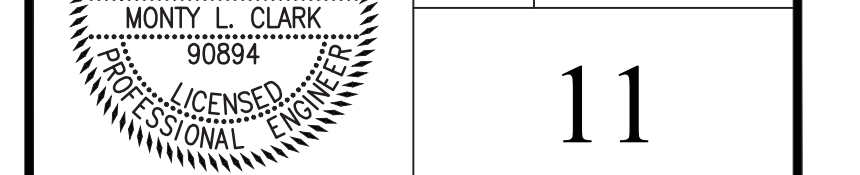
TEMPLE, TX,  
BELL COUNTY, TEXAS

### POST-DEVELOPMENT DRAINAGE CALCULATIONS SHEET 4

#### DRAWING STATUS

THESE DRAWINGS WERE PREPARED UNDER THE AUTHORITY OF MONTY L. CLARK, P.E. 90894, CLARK ASSOCIATES PLLC FIRM NO.: F-23184.  
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 FOR CONSTRUCTION  
 FINAL DRAWINGS

Designed	MLC
Drafted	PRA
Project No	212309.00
Plot Date	4-1-2022





### Hydrograph Report

1

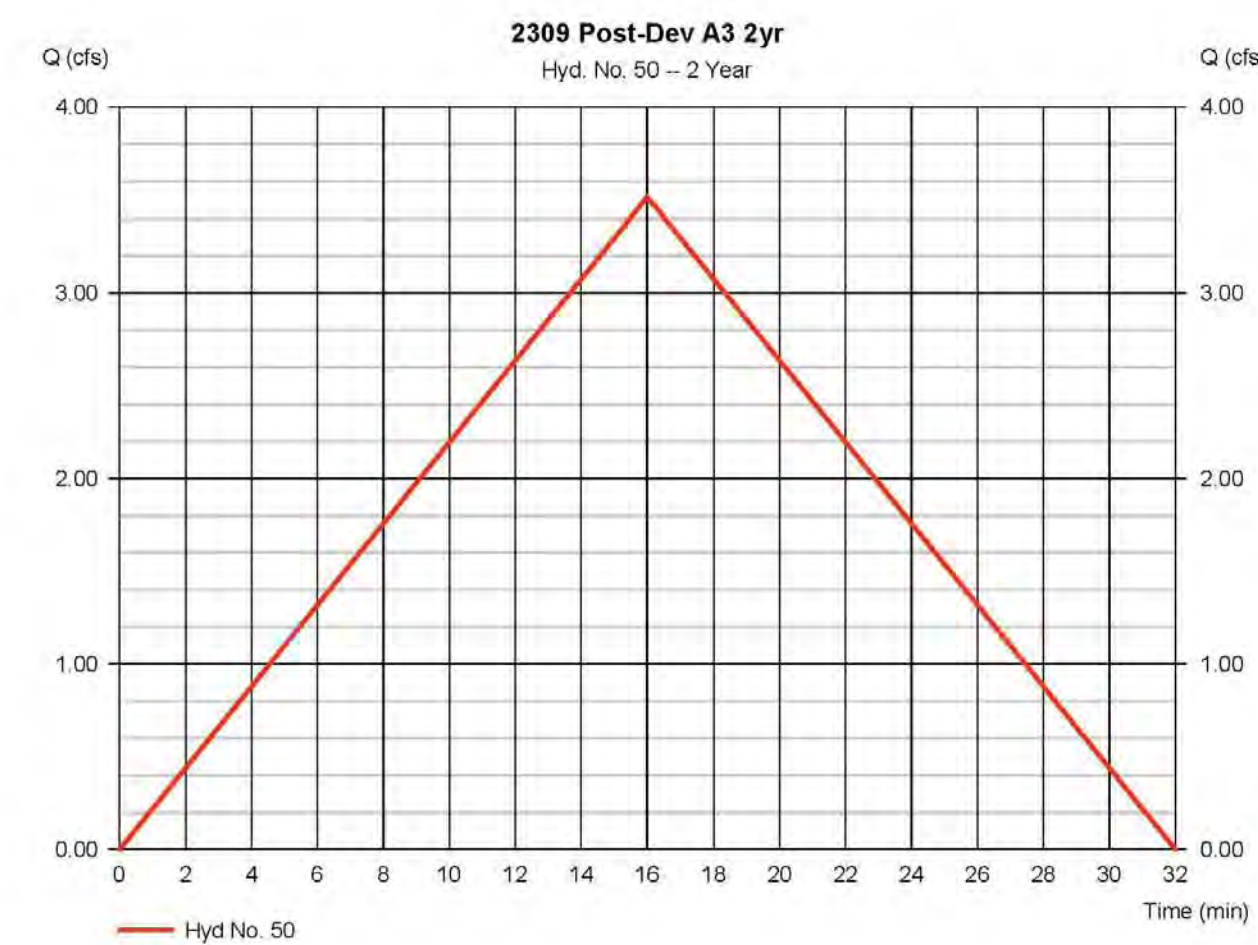
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 50

2309 Post-Dev A3 2yr

Hydrograph type	= Rational	Peak discharge	= 3.513 cfs
Storm frequency	= 2 yrs	Time to peak	= 16 min
Time interval	= 1 min	Hyd. volume	= 3,373 cuft
Drainage area	= 3.280 ac	Runoff coeff.	= 0.25*
Intensity	= 4.285 in/hr	Tc by TR55	= 16.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = + (3.280 x 0.25) / 3.280



### Hydrograph Report

14

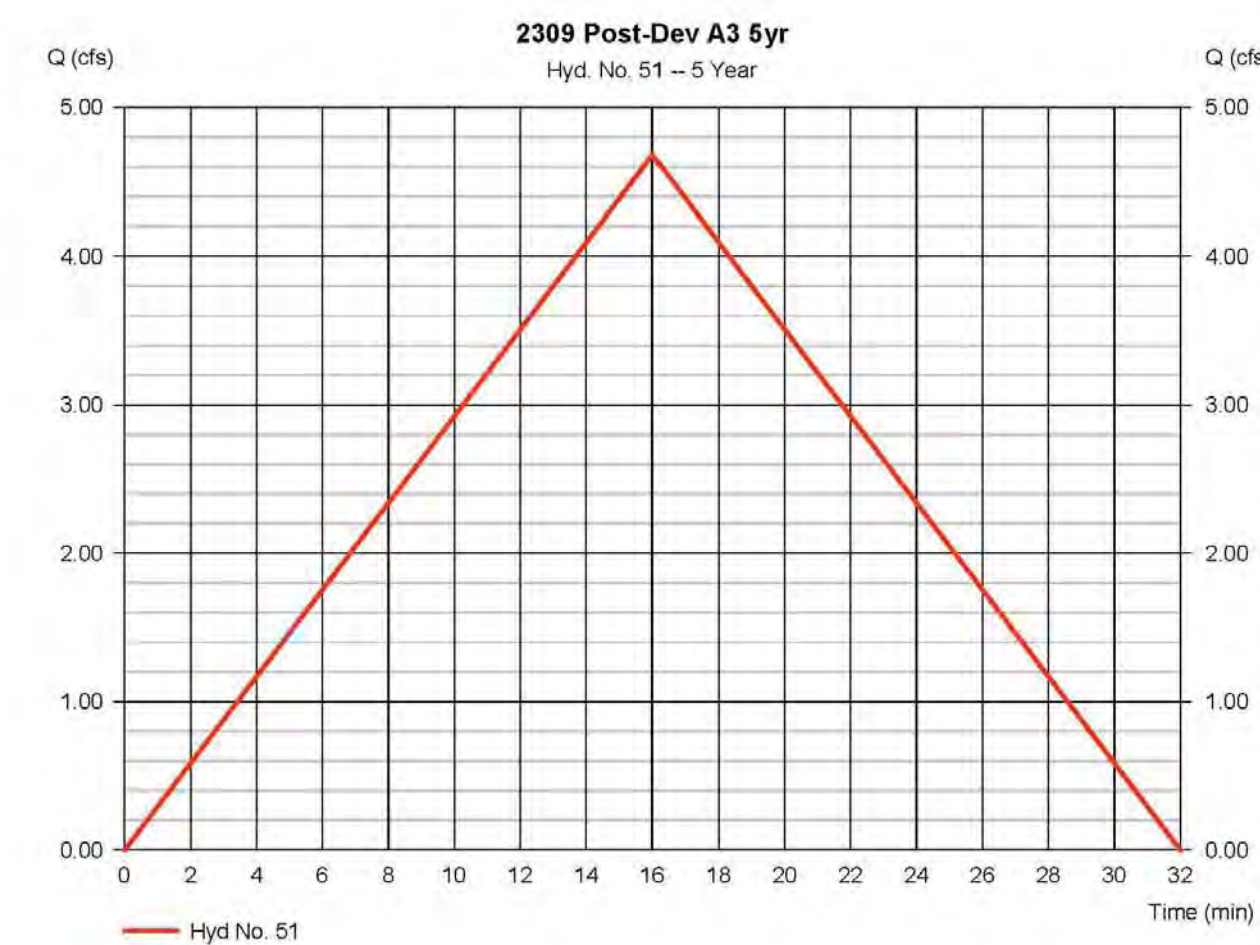
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 51

2309 Post-Dev A3 5yr

Hydrograph type	= Rational	Peak discharge	= 4.676 cfs
Storm frequency	= 5 yrs	Time to peak	= 16 min
Time interval	= 1 min	Hyd. volume	= 4,489 cuft
Drainage area	= 3.280 ac	Runoff coeff.	= 0.28*
Intensity	= 5.092 in/hr	Tc by TR55	= 16.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = + (3.280 x 0.28) / 3.280



### Hydrograph Report

21

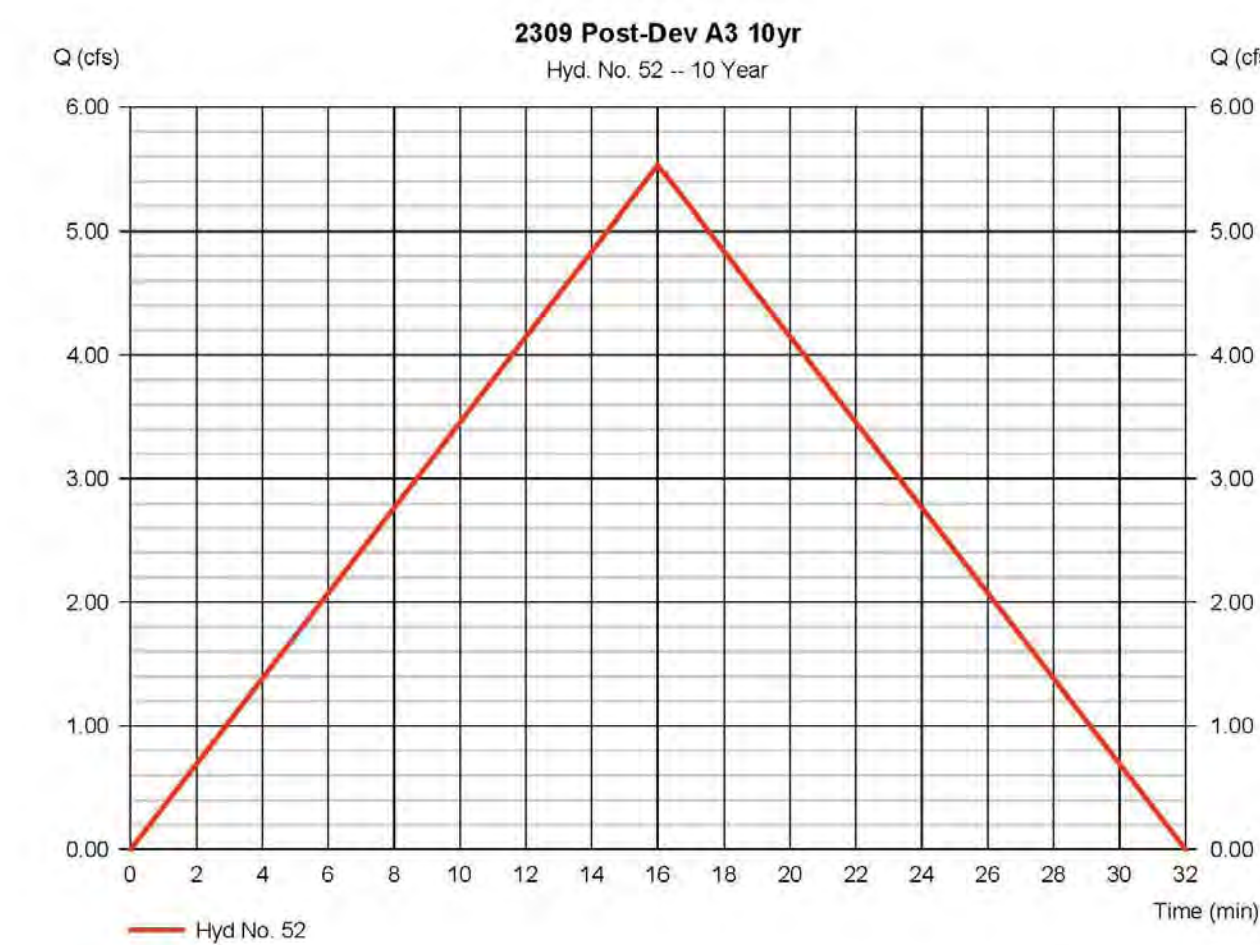
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 52

2309 Post-Dev A3 10yr

Hydrograph type	= Rational	Peak discharge	= 5.527 cfs
Storm frequency	= 10 yrs	Time to peak	= 16 min
Time interval	= 1 min	Hyd. volume	= 5,306 cuft
Drainage area	= 3.280 ac	Runoff coeff.	= 0.3*
Intensity	= 5.617 in/hr	Tc by TR55	= 16.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = + (3.280 x 0.30) / 3.280



### Hydrograph Report

28

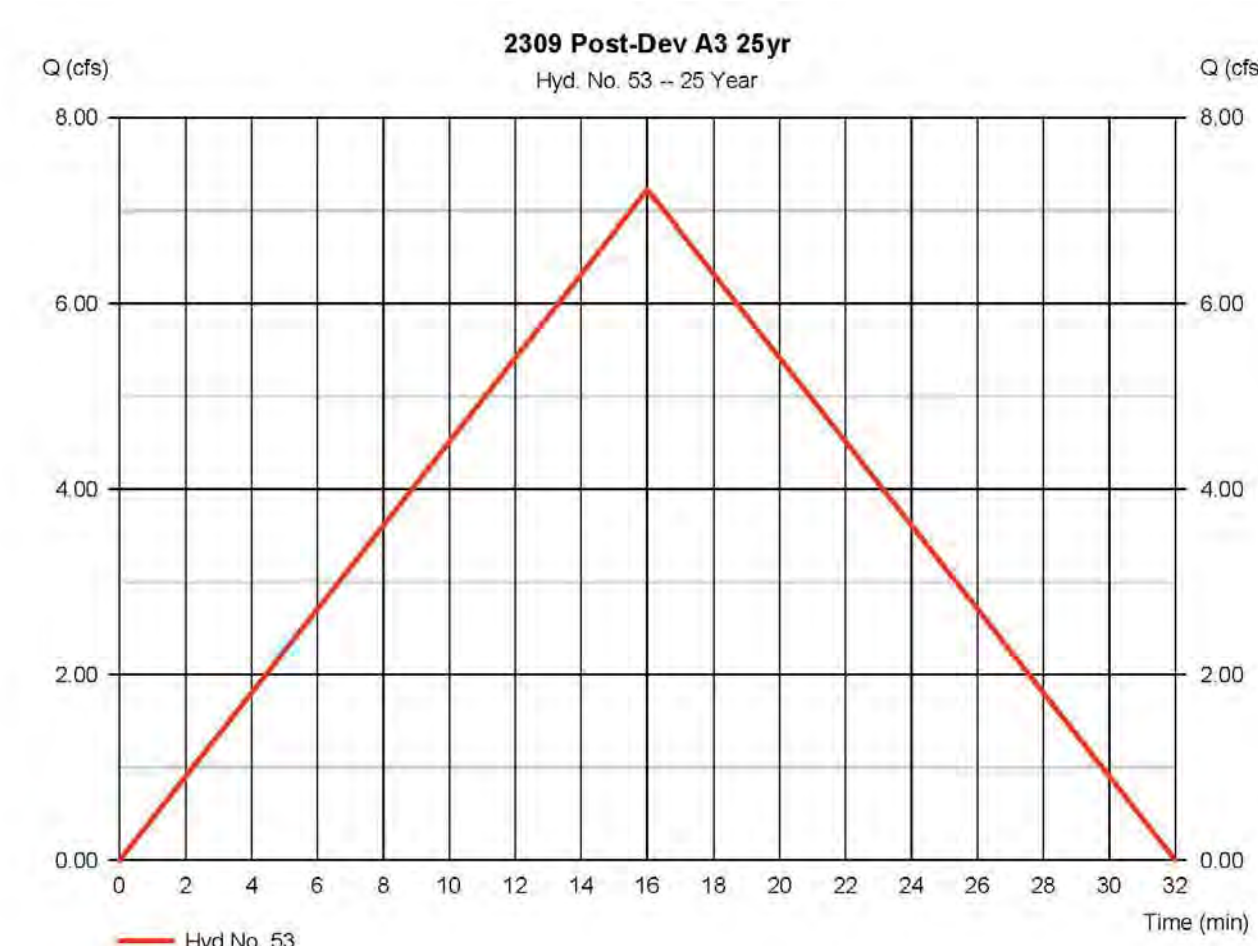
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 53

2309 Post-Dev A3 25yr

Hydrograph type	= Rational	Peak discharge	= 7.219 cfs
Storm frequency	= 25 yrs	Time to peak	= 16 min
Time interval	= 1 min	Hyd. volume	= 6,931 cuft
Drainage area	= 3.280 ac	Runoff coeff.	= 0.34*
Intensity	= 6.474 in/hr	Tc by TR55	= 16.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = + (3.280 x 0.34) / 3.280



### Hydrograph Report

35

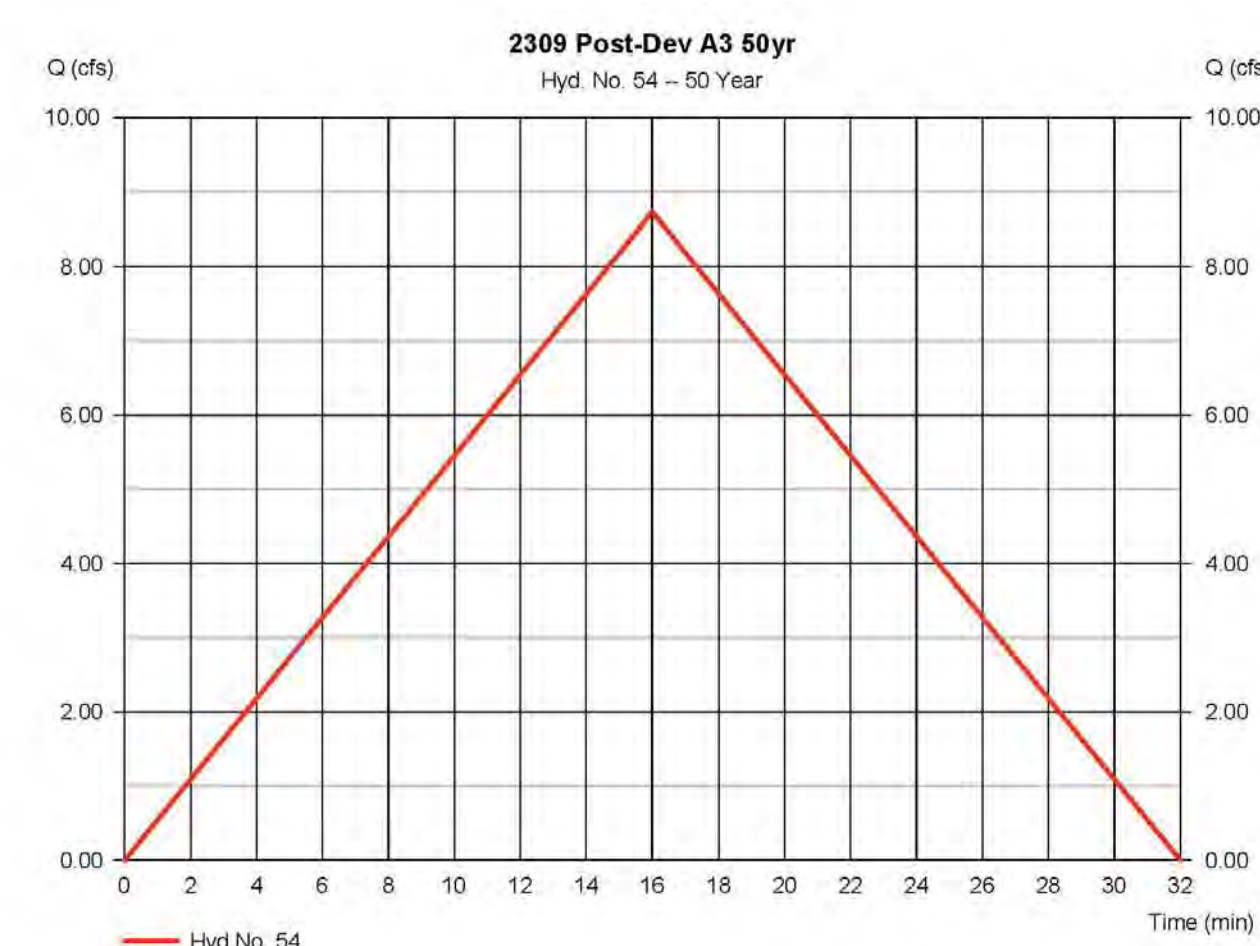
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 54

2309 Post-Dev A3 50yr

Hydrograph type	= Rational	Peak discharge	= 8.722 cfs
Storm frequency	= 50 yrs	Time to peak	= 16 min
Time interval	= 1 min	Hyd. volume	= 8,373 cuft
Drainage area	= 3.280 ac	Runoff coeff.	= 0.37*
Intensity	= 7.187 in/hr	Tc by TR55	= 16.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = + (3.280 x 0.37) / 3.280



### Hydrograph Report

42

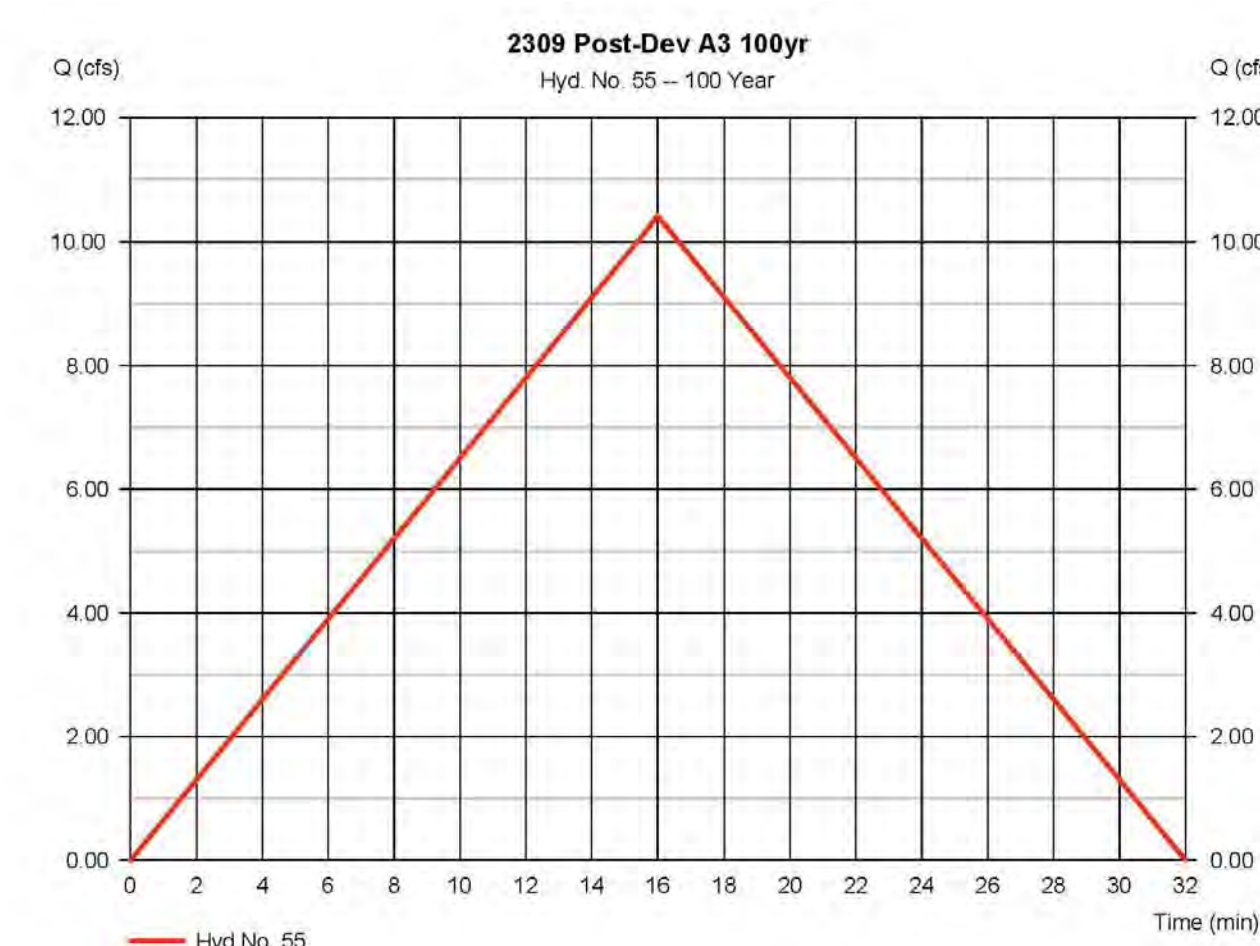
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 55

2309 Post-Dev A3 100yr

Hydrograph type	= Rational	Peak discharge	= 10.40 cfs
Storm frequency	= 100 yrs	Time to peak	= 16 min
Time interval	= 1 min	Hyd. volume	= 9,986 cuft
Drainage area	= 3.280 ac	Runoff coeff.	= 0.41*
Intensity	= 7.735 in/hr	Tc by TR55	= 16.00 min
IDF Curve	= Temple.IDF	Asc/Rec limb fact	= 1/1

\* Composite (Area/C) = + (3.280 x 0.41) / 3.280



## 5 AREA 3 POST-DEV DRAINAGE CALCULATIONS RATIONAL METHOD



### COTTON BOTTOM ESTATES NEW RESIDENTIAL DEVELOPMENT

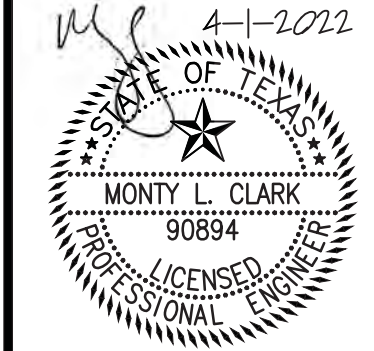
TEMPLE, TX,  
BELL COUNTY, TEXAS

### POST-DEVELOPMENT DRAINAGE CALCULATIONS SHEET 5

#### DRAWING STATUS

THESE DRAWINGS WERE PREPARED UNDER THE AUTHORITY OF MONTY L. CLARK, P.E. 90894, CLARK ASSOCIATES PLLC FIRM NO.: F-23184.  
 FOR REVIEW  
THIS DOCUMENT IS RELEASED FOR THE PURPOSES OF INTERIM REVIEW ONLY AS PER DATE ON DRAWING. IT IS NOT TO BE USED FOR BIDDING OR CONSTRUCTION PURPOSES. ONLY DRAWINGS ISSUED "FOR CONSTRUCTION" CAN BE CONSIDERED COMPLETE.  
 FOR CONSTRUCTION  
 FINAL DRAWINGS

Designed	MLC
Drafted	PRA
Project No	212309.00
Plot Date	4-1-2022





### Hydrograph Report

1

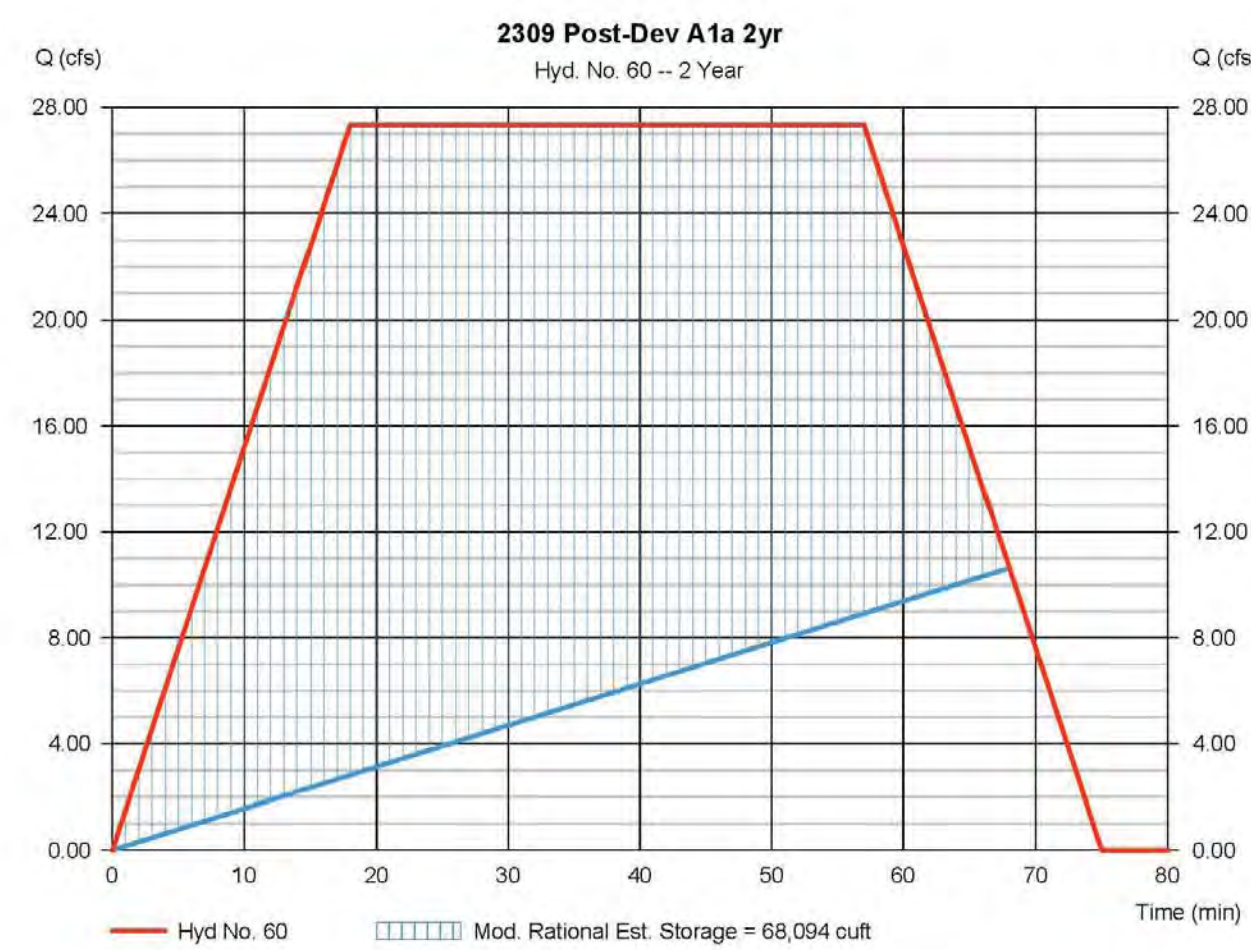
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 60

2309 Post-Dev A1a 2yr

Hydrograph type	= Mod. Rational	Peak discharge	= 27.34 cfs
Storm frequency	= 2 yrs	Time to peak	= 18 min
Time interval	= 1 min	Hyd. volume	= 93,613 cuft
Drainage area	= 40,670 ac	Runoff coeff.	= 0.34*
Intensity	= 1,977 in/hr	Tc by TR55	= 18.00 min
IDF Curve	= Temple IDF	Storm duration	= 3.2 x Tc
Target Q	= 11.21 cfs	Est. Req'd Storage	= 68,094 cuft

\* Composite (Area/C) = [(2,370 x 0.75) + (36,150 x 0.32) + (2,150 x 0.25)] / 40,670



### Hydrograph Report

14

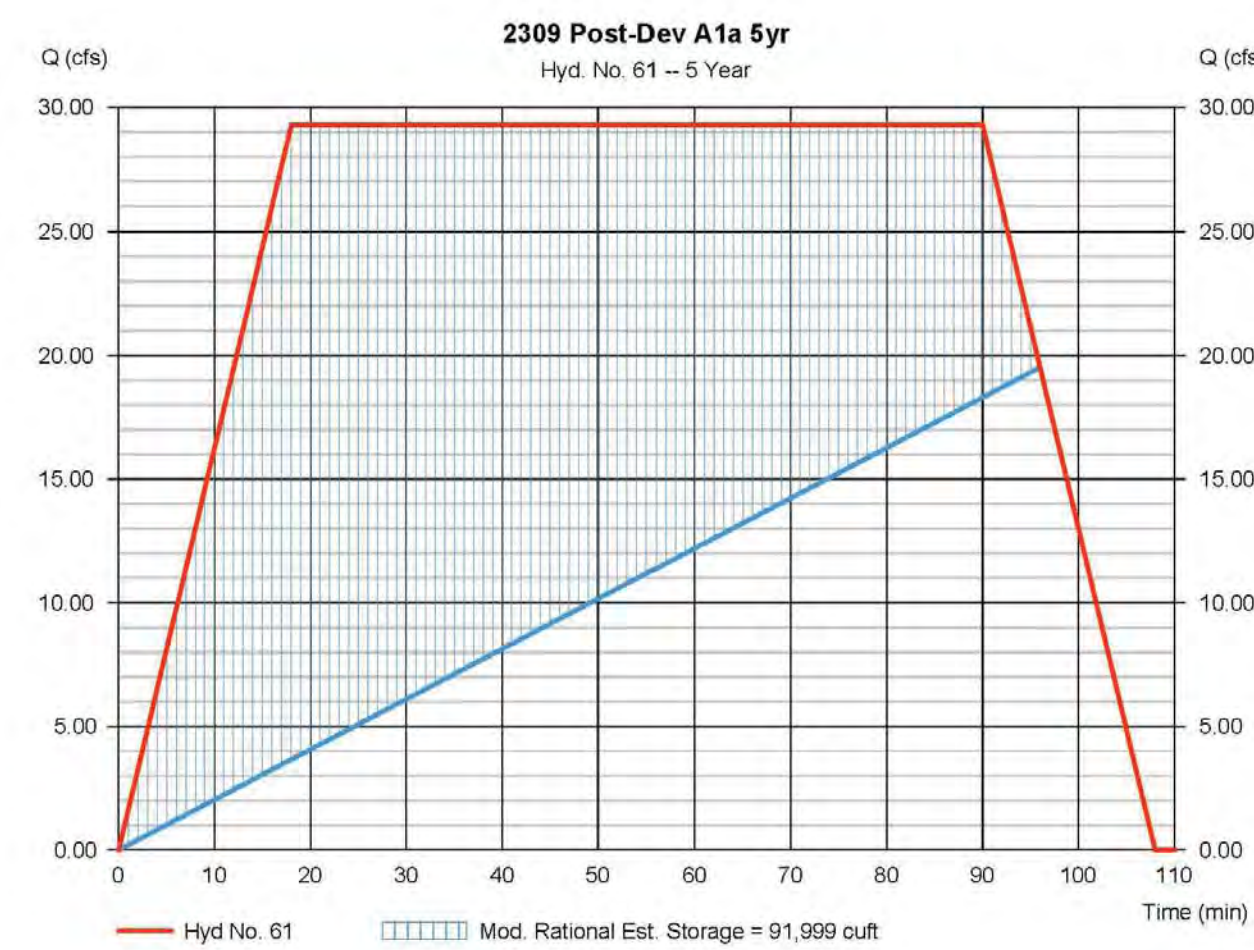
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 61

2309 Post-Dev A1a 5yr

Hydrograph type	= Mod. Rational	Peak discharge	= 29.27 cfs
Storm frequency	= 5 yrs	Time to peak	= 18 min
Time interval	= 1 min	Hyd. volume	= 158,075 cuft
Drainage area	= 40,670 ac	Runoff coeff.	= 0.36*
Intensity	= 1,999 in/hr	Tc by TR55	= 18.00 min
IDF Curve	= Temple IDF	Storm duration	= 5.0 x Tc
Target Q	= 20.30 cfs	Est. Req'd Storage	= 91,999 cuft

\* Composite (Area/C) = [(2,370 x 0.80) + (36,150 x 0.34) + (2,150 x 0.28)] / 40,670



### Hydrograph Report

21

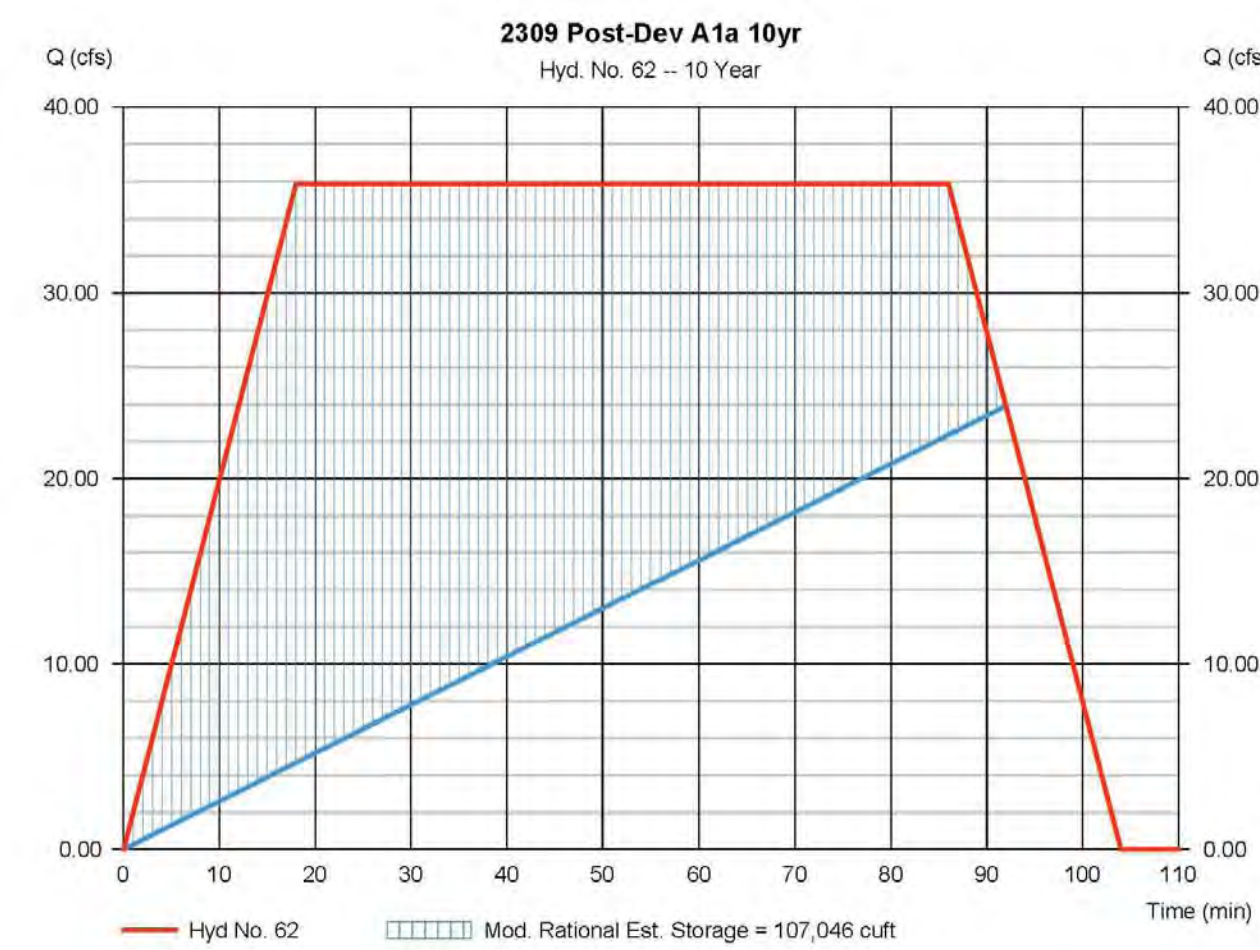
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 62

2309 Post-Dev A1a 10yr

Hydrograph type	= Mod. Rational	Peak discharge	= 35.86 cfs
Storm frequency	= 10 yrs	Time to peak	= 18 min
Time interval	= 1 min	Hyd. volume	= 185,125 cuft
Drainage area	= 40,670 ac	Runoff coeff.	= 0.38*
Intensity	= 2,320 in/hr	Tc by TR55	= 18.00 min
IDF Curve	= Temple IDF	Storm duration	= 4.8 x Tc
Target Q	= 24.88 cfs	Est. Req'd Storage	= 107,046 cuft

\* Composite (Area/C) = [(2,370 x 0.83) + (36,150 x 0.36) + (2,150 x 0.30)] / 40,670



### Hydrograph Report

28

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 63

2309 Post-Dev A1a 25yr

Hydrograph type	= Mod. Rational	Peak discharge	= 49.68 cfs
Storm frequency	= 25 yrs	Time to peak	= 18 min
Time interval	= 1 min	Hyd. volume	= 235,526 cuft
Drainage area	= 40,670 ac	Runoff coeff.	= 0.43*
Intensity	= 2,941 in/hr	Tc by TR55	= 18.00 min
IDF Curve	= Temple IDF	Storm duration	= 4.4 x Tc
Target Q	= 34.45 cfs	Est. Req'd Storage	= 134,703 cuft

\* Composite (Area/C) = [(2,370 x 0.88) + (36,150 x 0.41) + (2,150 x 0.34)] / 40,670



### Hydrograph Report

35

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 64

2309 Post-Dev A1a 50yr

Hydrograph type	= Mod. Rational	Peak discharge	= 56.05 cfs
Storm frequency	= 50 yrs	Time to peak	= 18 min
Time interval	= 1 min	Hyd. volume	= 289,366 cuft
Drainage area	= 40,670 ac	Runoff coeff.	= 0.46*
Intensity	= 2,996 in/hr	Tc by TR55	= 18.00 min
IDF Curve	= Temple IDF	Storm duration	= 4.8 x Tc
Target Q	= 41.95 cfs	Est. Req'd Storage	= 157,704 cuft

\* Composite (Area/C) = [(2,370 x 0.92) + (36,150 x 0.44) + (2,150 x 0.37)] / 40,670



### Hydrograph Report

42

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

#### Hyd. No. 65

2309 Post-Dev A1a 100yr

Hydrograph type	= Mod. Rational	Peak discharge	= 75.58 cfs
Storm frequency	= 100 yrs	Time to peak	= 18 min
Time interval	= 1 min	Hyd. volume	= 317,531 cuft
Drainage area	= 40,670 ac	Runoff coeff.	= 0.5*
Intensity	= 3,717 in/hr	Tc by TR55	= 18.00 min
IDF Curve	= Temple IDF	Storm duration	= 3.9 x Tc
Target Q	= 52.11 cfs	Est. Req'd Storage	= 178,978 cuft

\* Composite (Area/C) = [(2,370 x 0.97) + (36,150 x 0.48) + (2,150 x 0.41)] / 40,670



## 6 AREA 1a POST-DEV DRAINAGE CALCULATIONS MODIFIED RATIONAL METHOD



### COTTON BOTTOM ESTATES NEW RESIDENTIAL DEVELOPMENT

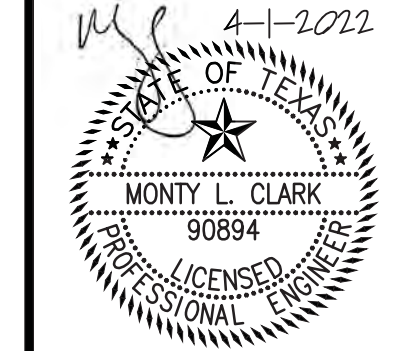
TEMPLE, TX,  
BELL COUNTY, TEXAS

### POST-DEVELOPMENT DRAINAGE CALCULATIONS SHEET 6

#### DRAWING STATUS

THESE DRAWINGS WERE PREPARED UNDER THE AUTHORITY OF  
MONTY L. CLARK, P.E. 90894, CLARK ASSOCIATES PLLC FIRM NO. F-23184.  
 FOR REVIEW  
THIS DOCUMENT IS RELEASED FOR THE PURPOSES OF INTERIM REVIEW ONLY  
AS PER DATE ON DRAWING. IT IS NOT TO BE USED FOR BIDDING OR  
CONSTRUCTION PURPOSES. ONLY DRAWINGS ISSUED "FOR CONSTRUCTION"  
CAN BE CONSIDERED COMPLETE.  
 FOR CONSTRUCTION  
FINAL DRAWINGS

Designed	MLC
Drafted	PRA
Project No	212309.00
Plot Date	4-1-2022
<b>13</b>	





### Hydrograph Report

1

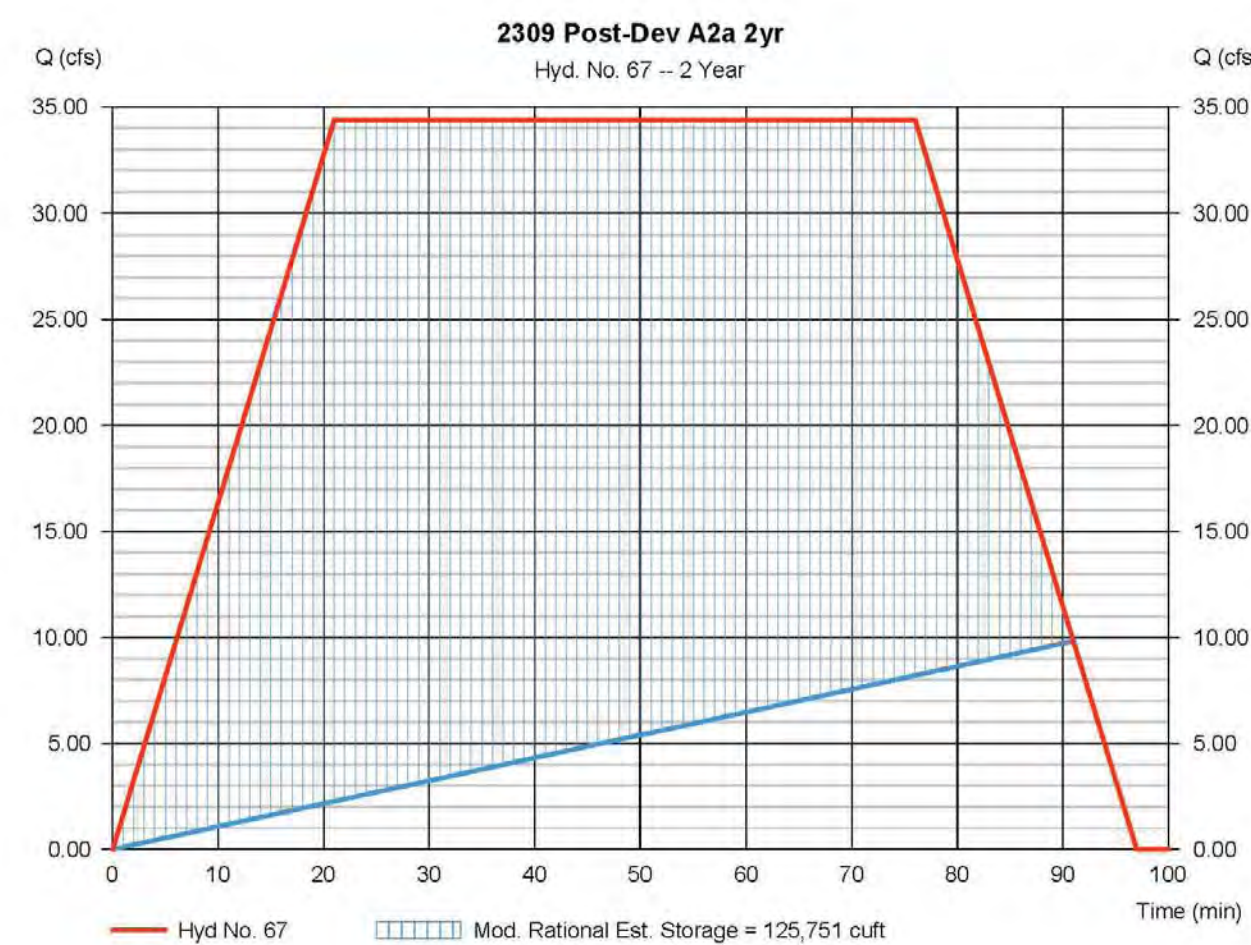
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 67

2309 Post-Dev A2a 2yr

Hydrograph type	= Mod. Rational	Peak discharge	= 34.38 cfs
Storm frequency	= 2 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 156,821 cuft
Drainage area	= 64,790 ac	Runoff coeff.	= 0.34*
Intensity	= 1,561 in/hr	Tc by User	= 21.00 min
IDF Curve	= Temple IDF	Storm duration	= 3.6 x Tc
Target Q	= 10.61 cfs	Est. Req'd Storage	= 125,751 cuft

\* Composite (Area/C) = [(4,400 x 0.75) + (56,230 x 0.32) + (4,160 x 0.25)] / 64,790



### Hydrograph Report

8

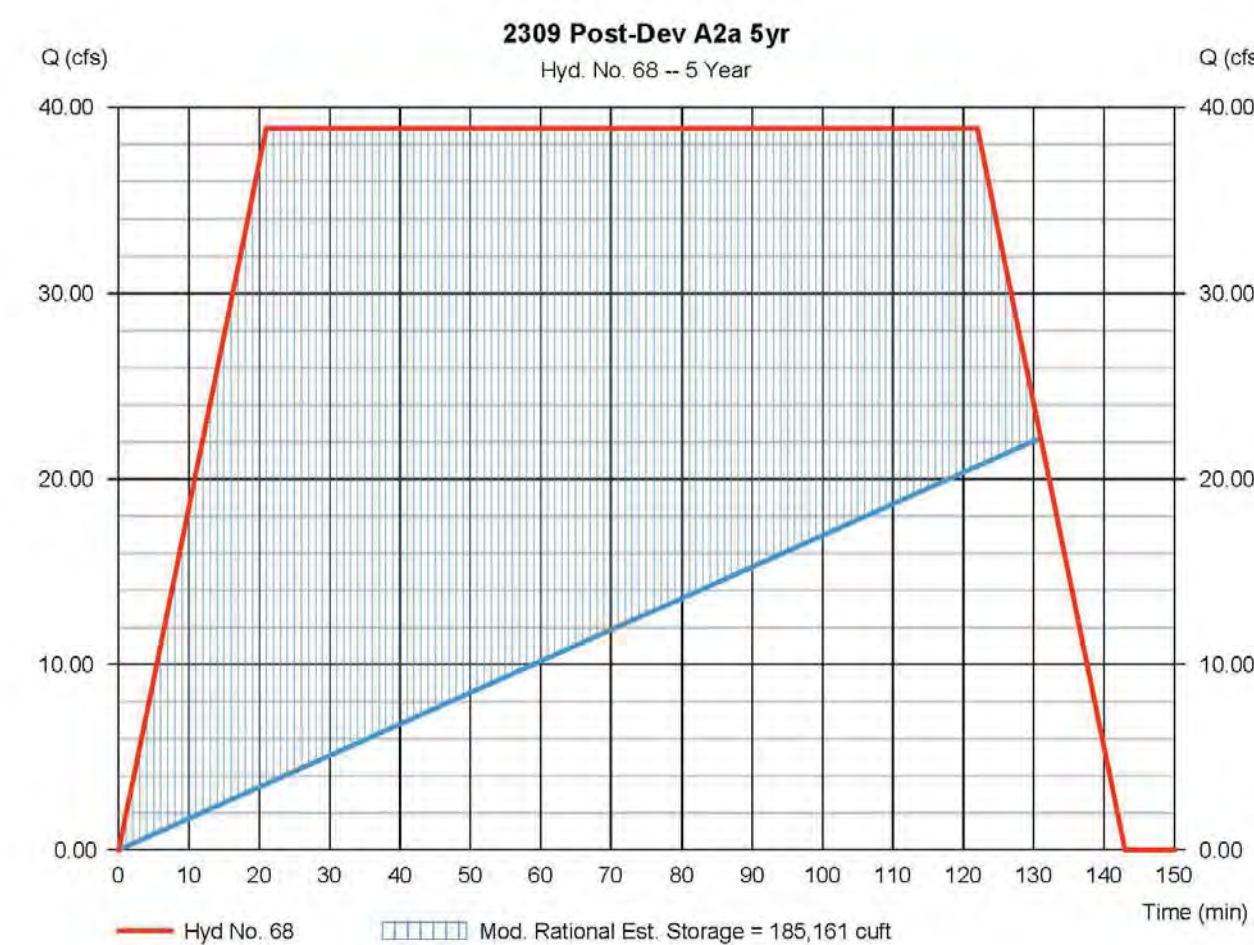
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 68

2309 Post-Dev A2a 5yr

Hydrograph type	= Mod. Rational	Peak discharge	= 38.88 cfs
Storm frequency	= 5 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 284,593 cuft
Drainage area	= 64,790 ac	Runoff coeff.	= 0.37*
Intensity	= 1,622 in/hr	Tc by User	= 21.00 min
IDF Curve	= Temple IDF	Storm duration	= 5.8 x Tc
Target Q	= 23.09 cfs	Est. Req'd Storage	= 185,161 cuft

\* Composite (Area/C) = [(4,400 x 0.80) + (56,230 x 0.34) + (4,160 x 0.26)] / 64,790



### Hydrograph Report

15

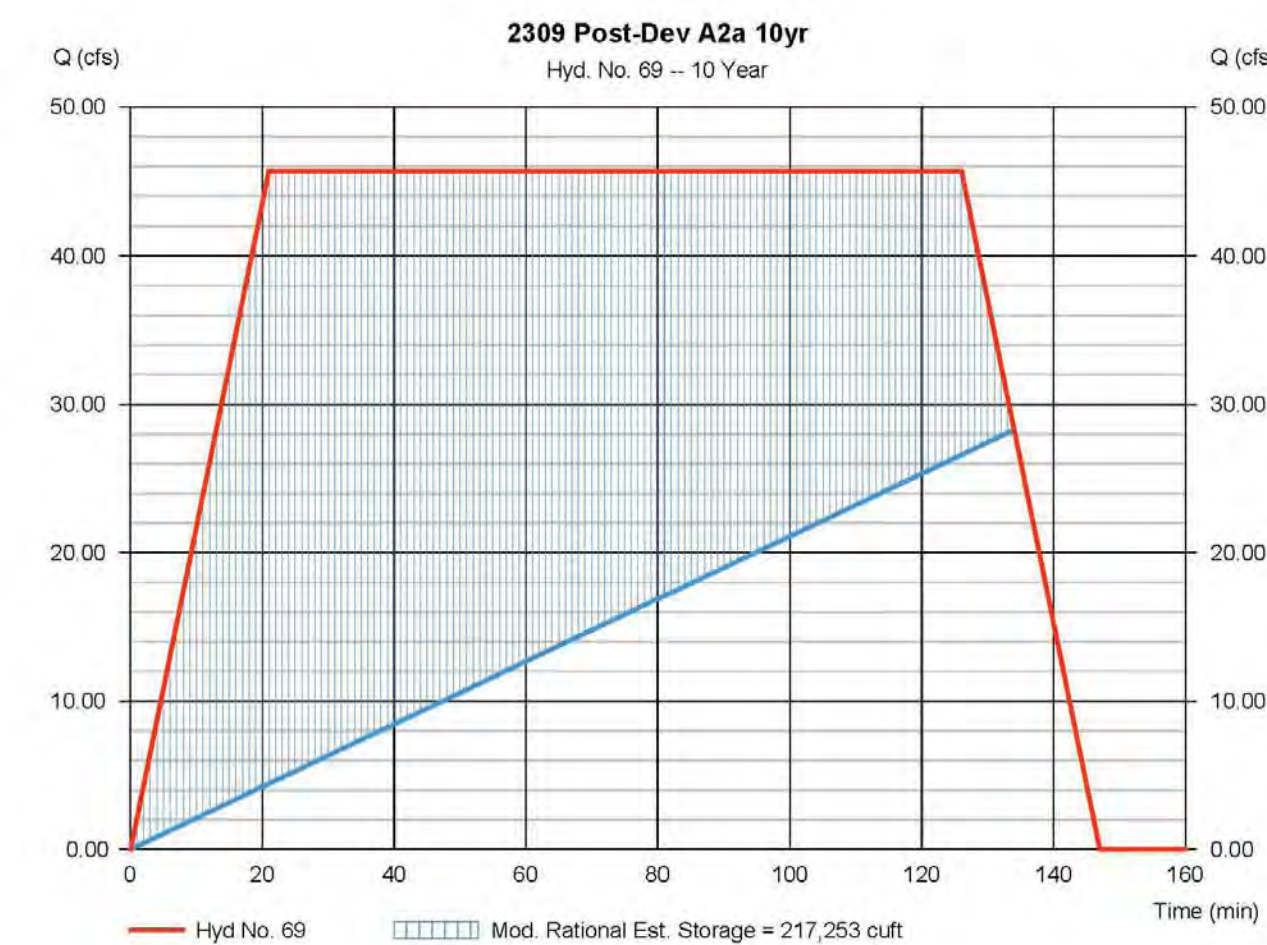
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 69

2309 Post-Dev A2a 10yr

Hydrograph type	= Mod. Rational	Peak discharge	= 45.69 cfs
Storm frequency	= 10 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 345,433 cuft
Drainage area	= 64,790 ac	Runoff coeff.	= 0.39*
Intensity	= 1,808 in/hr	Tc by User	= 21.00 min
IDF Curve	= Temple IDF	Storm duration	= 6.0 x Tc
Target Q	= 28.94 cfs	Est. Req'd Storage	= 217,253 cuft

\* Composite (Area/C) = [(4,400 x 0.83) + (56,230 x 0.36) + (4,160 x 0.30)] / 64,790



### Hydrograph Report

22

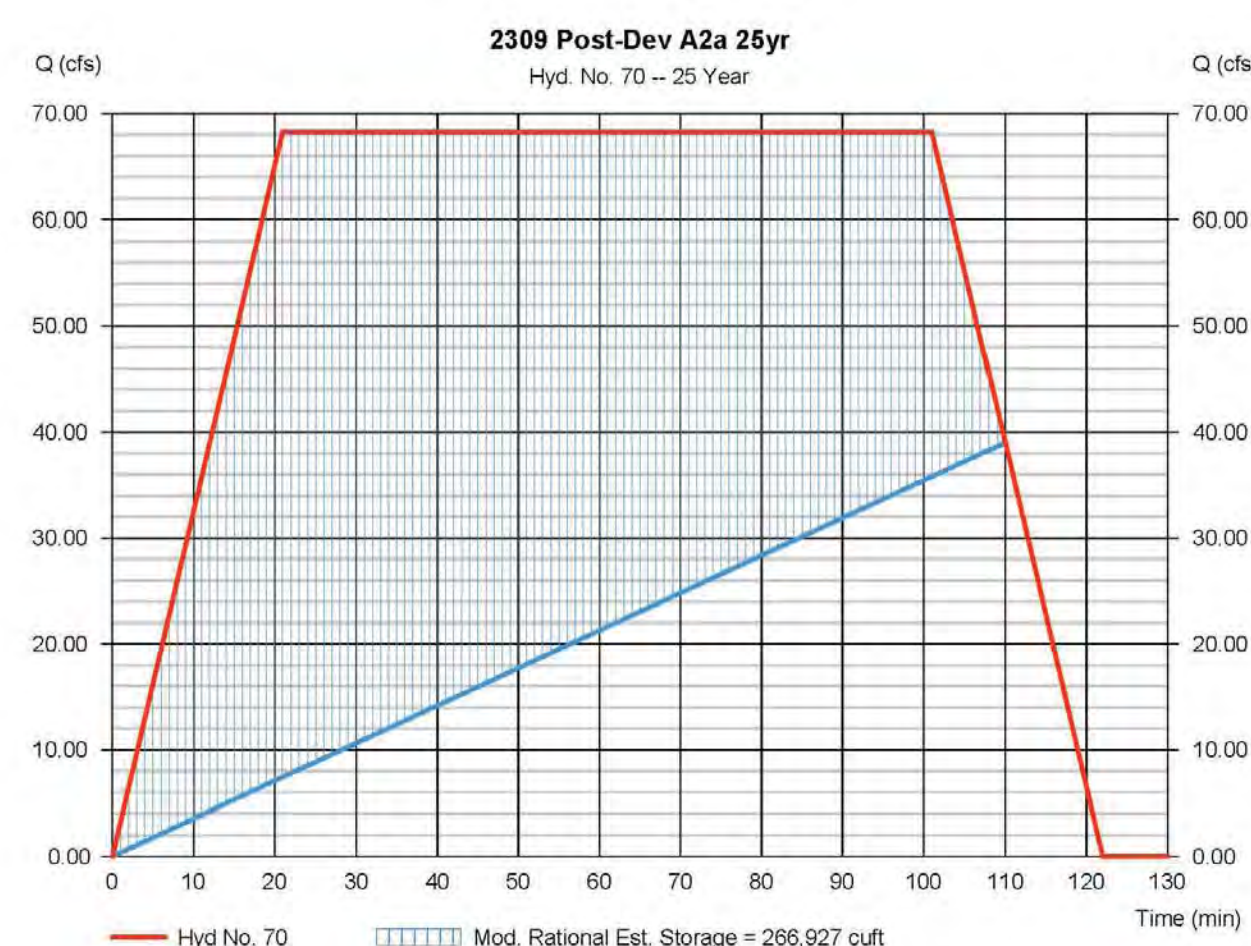
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 70

2309 Post-Dev A2a 25yr

Hydrograph type	= Mod. Rational	Peak discharge	= 68.24 cfs
Storm frequency	= 25 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 413,593 cuft
Drainage area	= 64,790 ac	Runoff coeff.	= 0.44*
Intensity	= 2,394 in/hr	Tc by User	= 21.00 min
IDF Curve	= Temple IDF	Storm duration	= 4.8 x Tc
Target Q	= 39.84 cfs	Est. Req'd Storage	= 266,927 cuft

\* Composite (Area/C) = [(4,400 x 0.88) + (56,230 x 0.41) + (4,160 x 0.34)] / 64,790



### Hydrograph Report

29

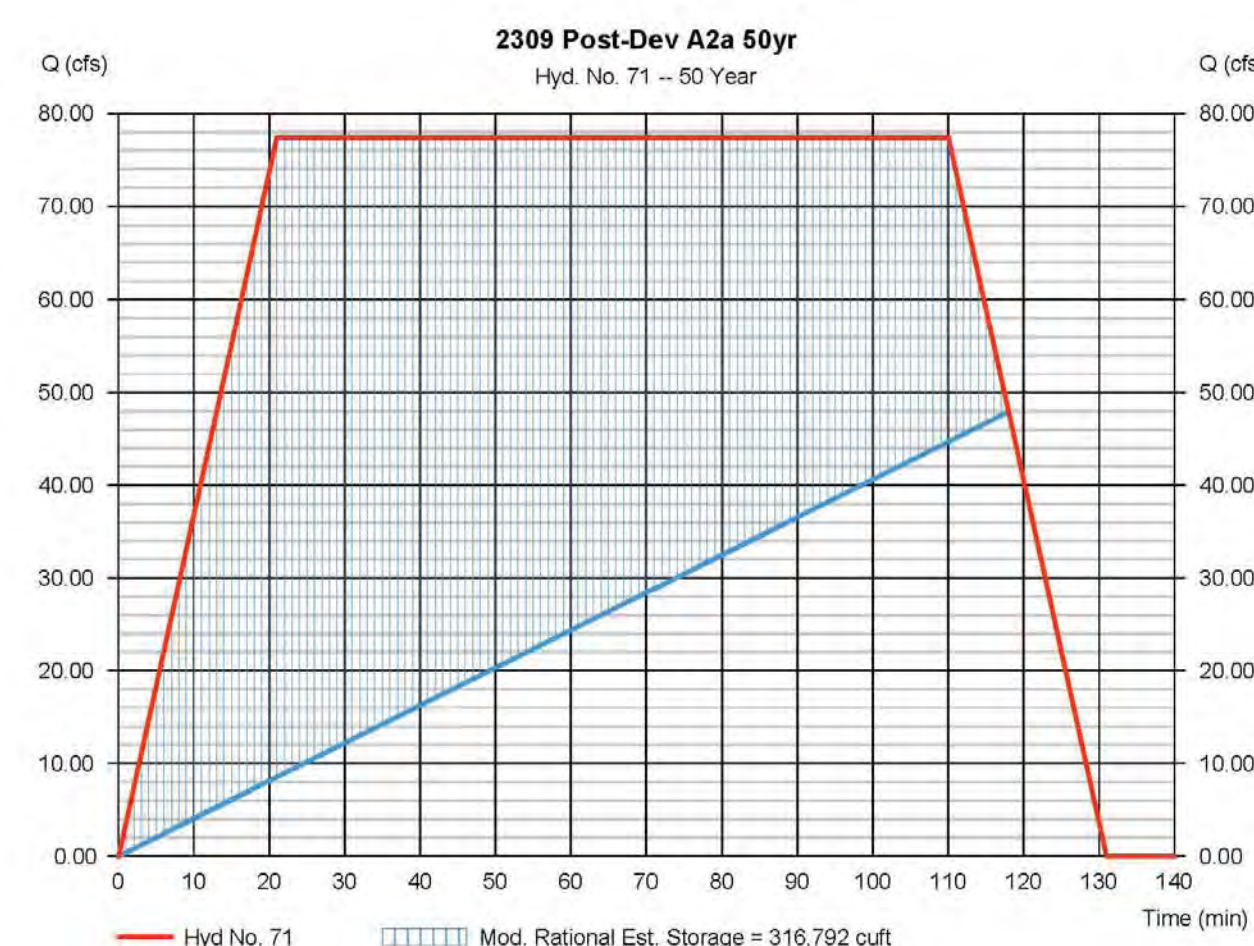
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 71

2309 Post-Dev A2a 50yr

Hydrograph type	= Mod. Rational	Peak discharge	= 77.43 cfs
Storm frequency	= 50 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 511,209 cuft
Drainage area	= 64,790 ac	Runoff coeff.	= 0.47*
Intensity	= 2,543 in/hr	Tc by User	= 21.00 min
IDF Curve	= Temple IDF	Storm duration	= 5.2 x Tc
Target Q	= 49.20 cfs	Est. Req'd Storage	= 316,792 cuft

\* Composite (Area/C) = [(4,400 x 0.92) + (56,230 x 0.44) + (4,160 x 0.37)] / 64,790



### Hydrograph Report

36

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/1/2022

#### Hyd. No. 72

2309 Post-Dev A2a 100yr

Hydrograph type	= Mod. Rational	Peak discharge	= 98.46 cfs
Storm frequency	= 100 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 573,179 cuft
Drainage area	= 64,790 ac	Runoff coeff.	= 0.51*
Intensity	= 2,980 in/hr	Tc by User	= 21.00 min
IDF Curve	= Temple IDF	Storm duration	= 4.6 x Tc
Target Q	= 62.72 cfs	Est. Req'd Storage	= 349,891 cuft

\* Composite (Area/C) = [(4,400 x 0.97) + (56,230 x 0.48) + (4,160 x 0.41)] / 64,790



## 7 AREA 2a POST-DEV DRAINAGE CALCULATIONS MODIFIED RATIONAL METHOD



**COTTON BOTTOM ESTATES**  
NEW RESIDENTIAL DEVELOPMENT

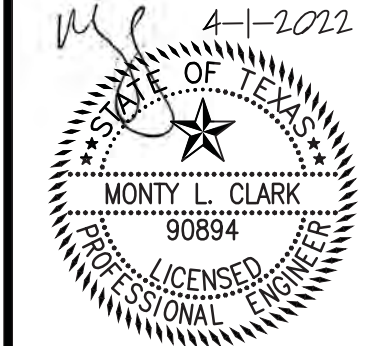
TEMPLE, TX,  
BELL COUNTY, TEXAS

**POST-DEVELOPMENT DRAINAGE CALCULATIONS SHEET 7**

#### DRAWING STATUS

THESE DRAWINGS WERE PREPARED UNDER THE AUTHORITY OF MONTY L. CLARK, P.E. 90894, CLARK ASSOCIATES PLLC FIRM NO. F-23184.  
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 FOR CONSTRUCTION  
 FINAL DRAWINGS

Designed	MLC
Drafted	PRA
Project No	212309.00
Plot Date	4-1-2022
<b>14</b>	





### Hydrograph Report

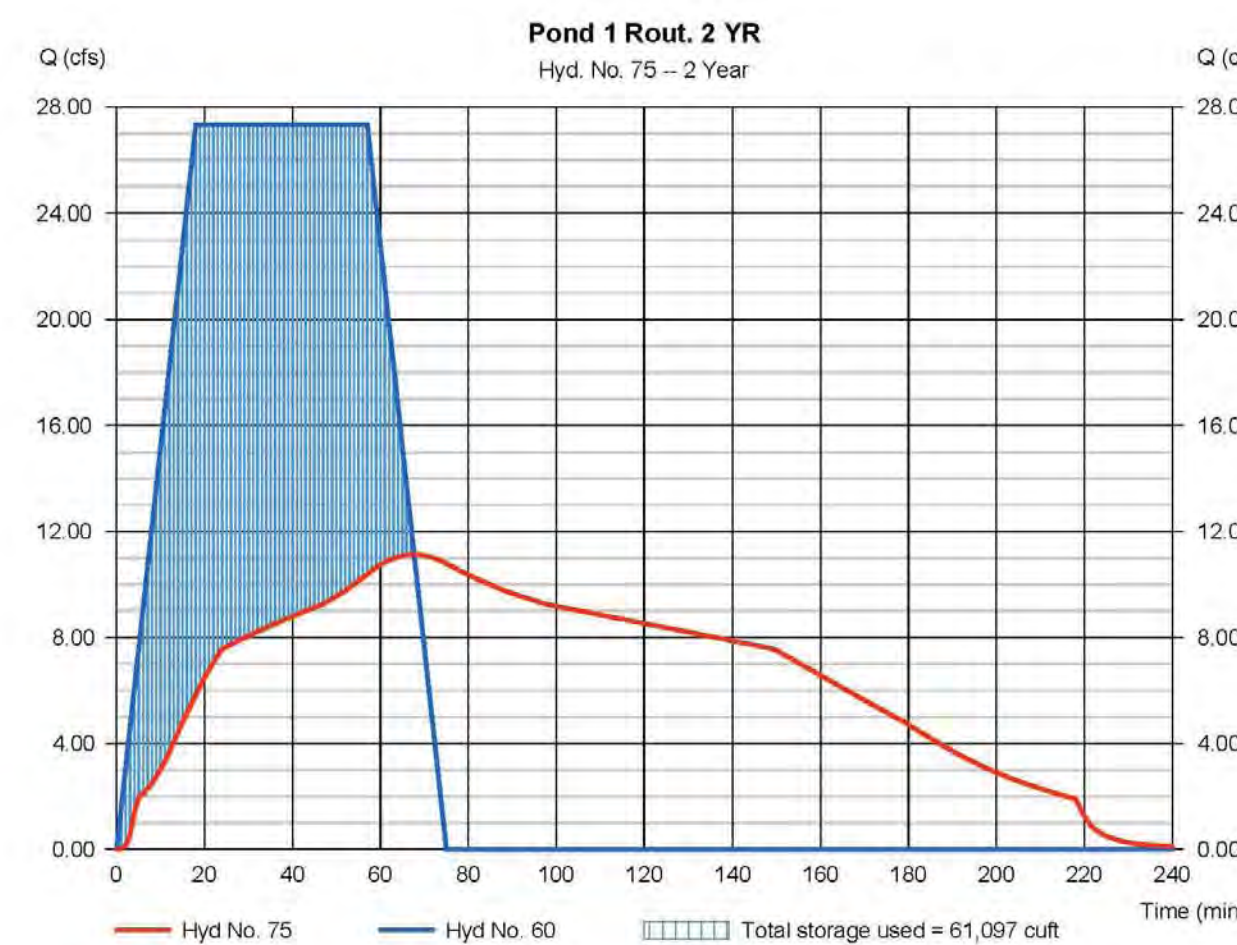
1

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

**Hyd. No. 75**  
Pond 1 Rout. 2 YR

Hydrograph type = Reservoir	Peak discharge = 11.12 cfs
Storm frequency = 2 yrs	Time to peak = 68 min
Time interval = 1 min	Hyd. volume = 93,511 cuft
Inflow hyd. No. = 60 - 2309 Post-Dev A1a 2yr	Max. Elevation = 507.80 ft
Reservoir name = 2309 Pond 1	Max. Storage = 61,097 cuft

Storage indication method used.



### Hydrograph Report

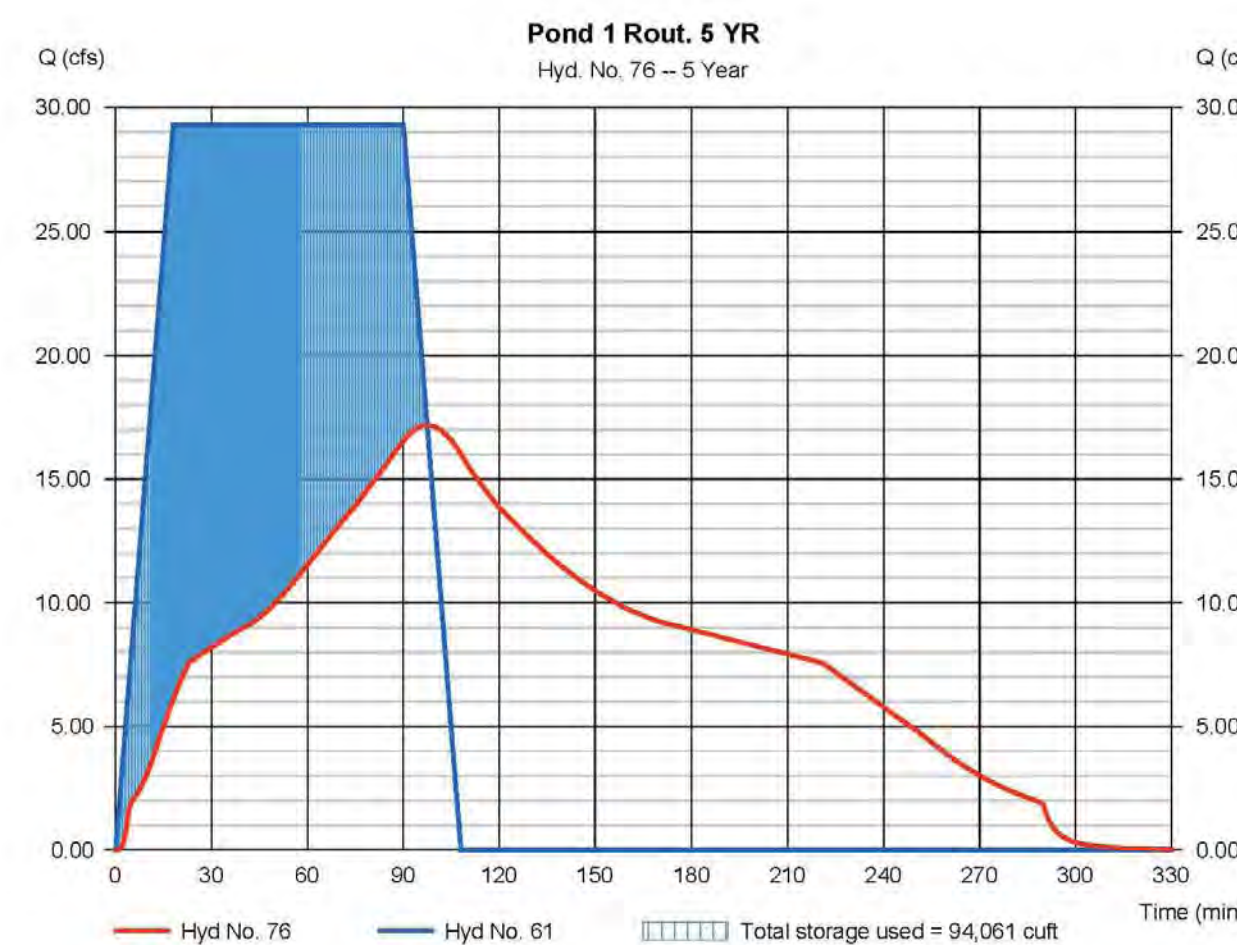
14

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

**Hyd. No. 76**  
Pond 1 Rout. 5 YR

Hydrograph type = Reservoir	Peak discharge = 17.18 cfs
Storm frequency = 5 yrs	Time to peak = 97 min
Time interval = 1 min	Hyd. volume = 158,071 cuft
Inflow hyd. No. = 61 - 2309 Post-Dev A1a 5yr	Max. Elevation = 508.32 ft
Reservoir name = 2309 Pond 1	Max. Storage = 94,061 cuft

Storage indication method used.



### Hydrograph Report

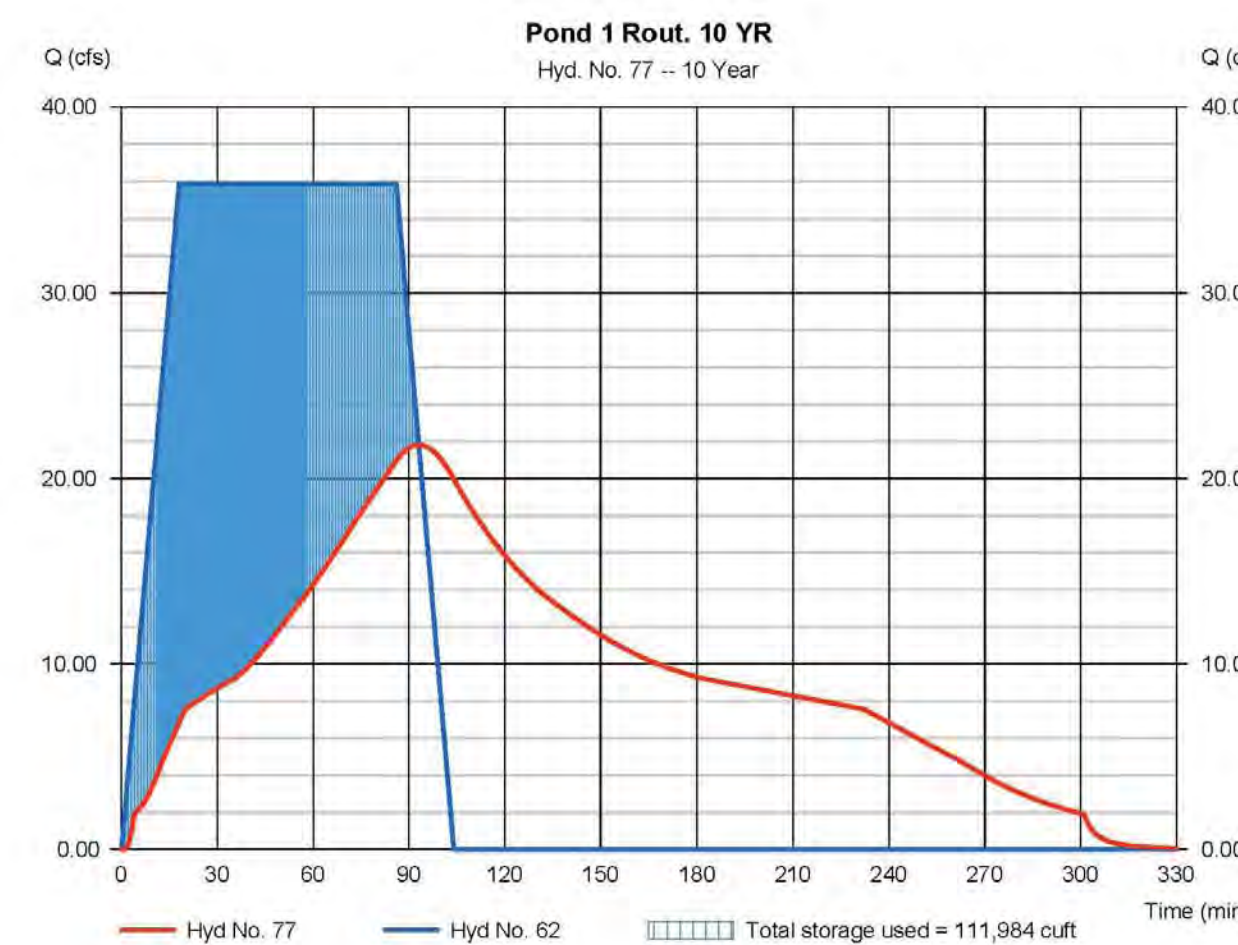
21

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

**Hyd. No. 77**  
Pond 1 Rout. 10 YR

Hydrograph type = Reservoir	Peak discharge = 21.81 cfs
Storm frequency = 10 yrs	Time to peak = 93 min
Time interval = 1 min	Hyd. volume = 185,035 cuft
Inflow hyd. No. = 62 - 2309 Post-Dev A1a 10yr	Max. Elevation = 508.57 ft
Reservoir name = 2309 Pond 1	Max. Storage = 111,984 cuft

Storage indication method used.



### Hydrograph Report

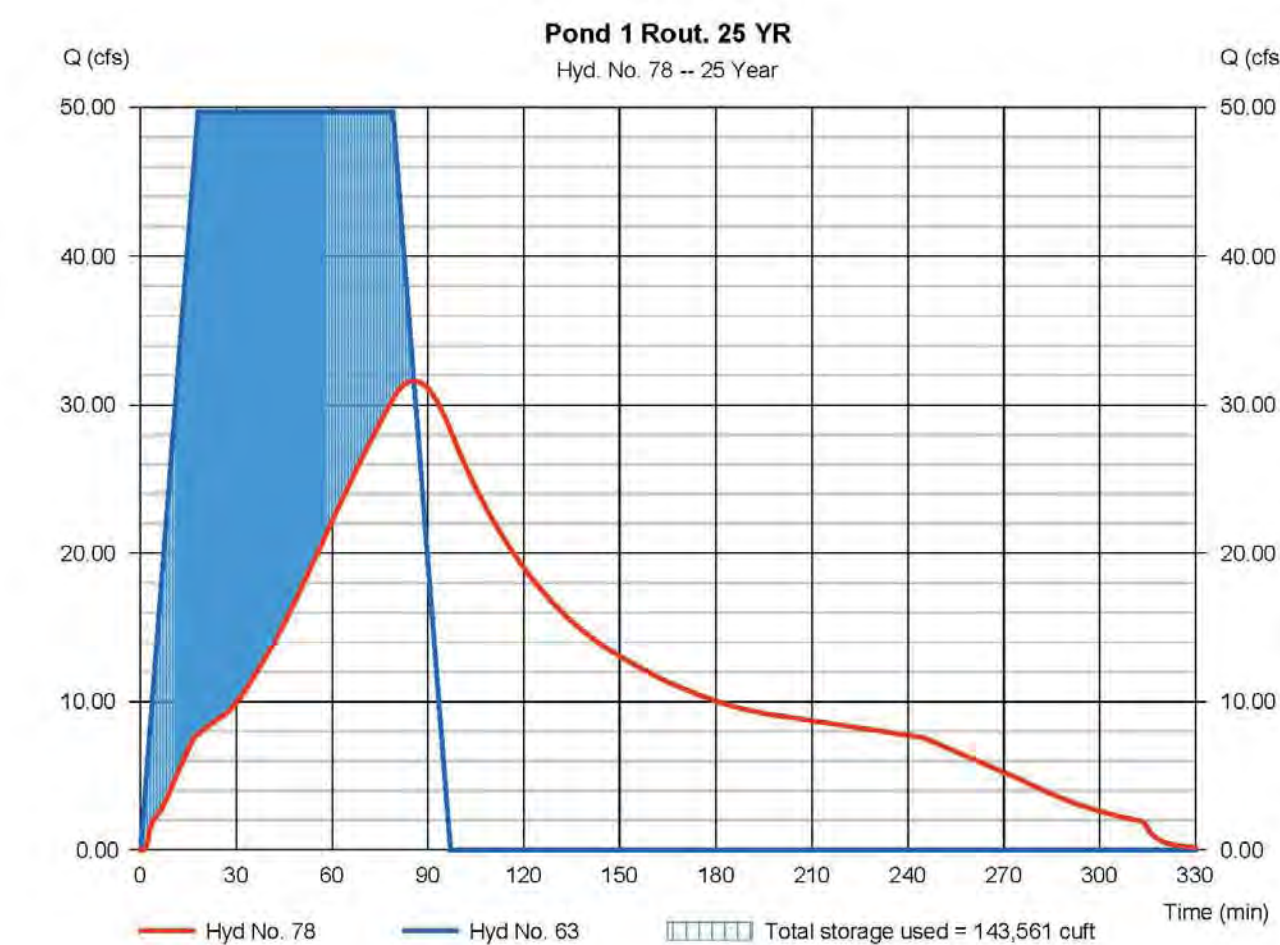
28

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

**Hyd. No. 78**  
Pond 1 Rout. 25 YR

Hydrograph type = Reservoir	Peak discharge = 31.61 cfs
Storm frequency = 25 yrs	Time to peak = 86 min
Time interval = 1 min	Hyd. volume = 235,463 cuft
Inflow hyd. No. = 63 - 2309 Post-Dev A1a 25yr	Max. Elevation = 509.01 ft
Reservoir name = 2309 Pond 1	Max. Storage = 143,561 cuft

Storage indication method used.



### Hydrograph Report

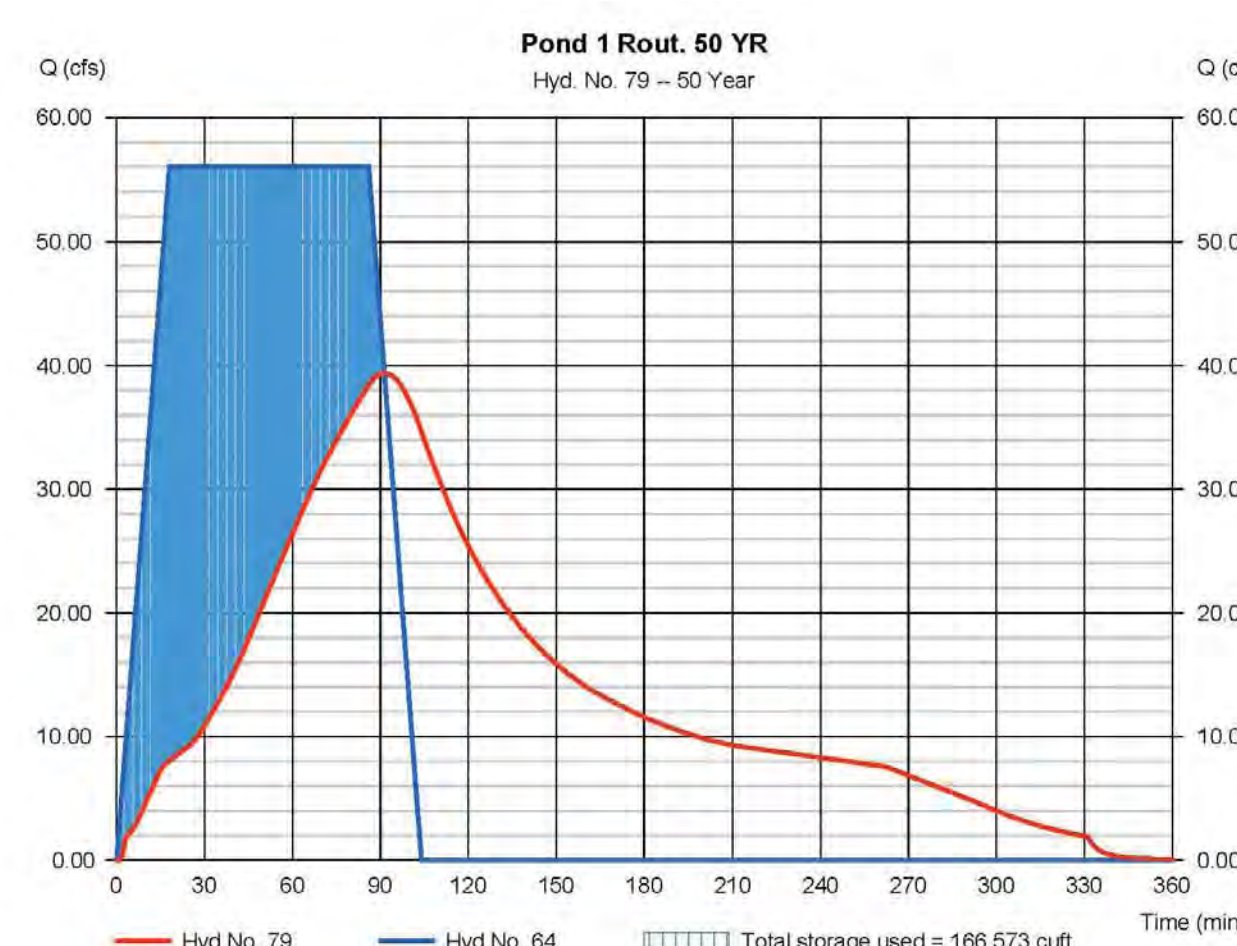
35

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

**Hyd. No. 79**  
Pond 1 Rout. 50 YR

Hydrograph type = Reservoir	Peak discharge = 39.39 cfs
Storm frequency = 50 yrs	Time to peak = 91 min
Time interval = 1 min	Hyd. volume = 289,227 cuft
Inflow hyd. No. = 64 - 2309 Post-Dev A1a 50yr	Max. Elevation = 509.32 ft
Reservoir name = 2309 Pond 1	Max. Storage = 166,573 cuft

Storage indication method used.



### Hydrograph Report

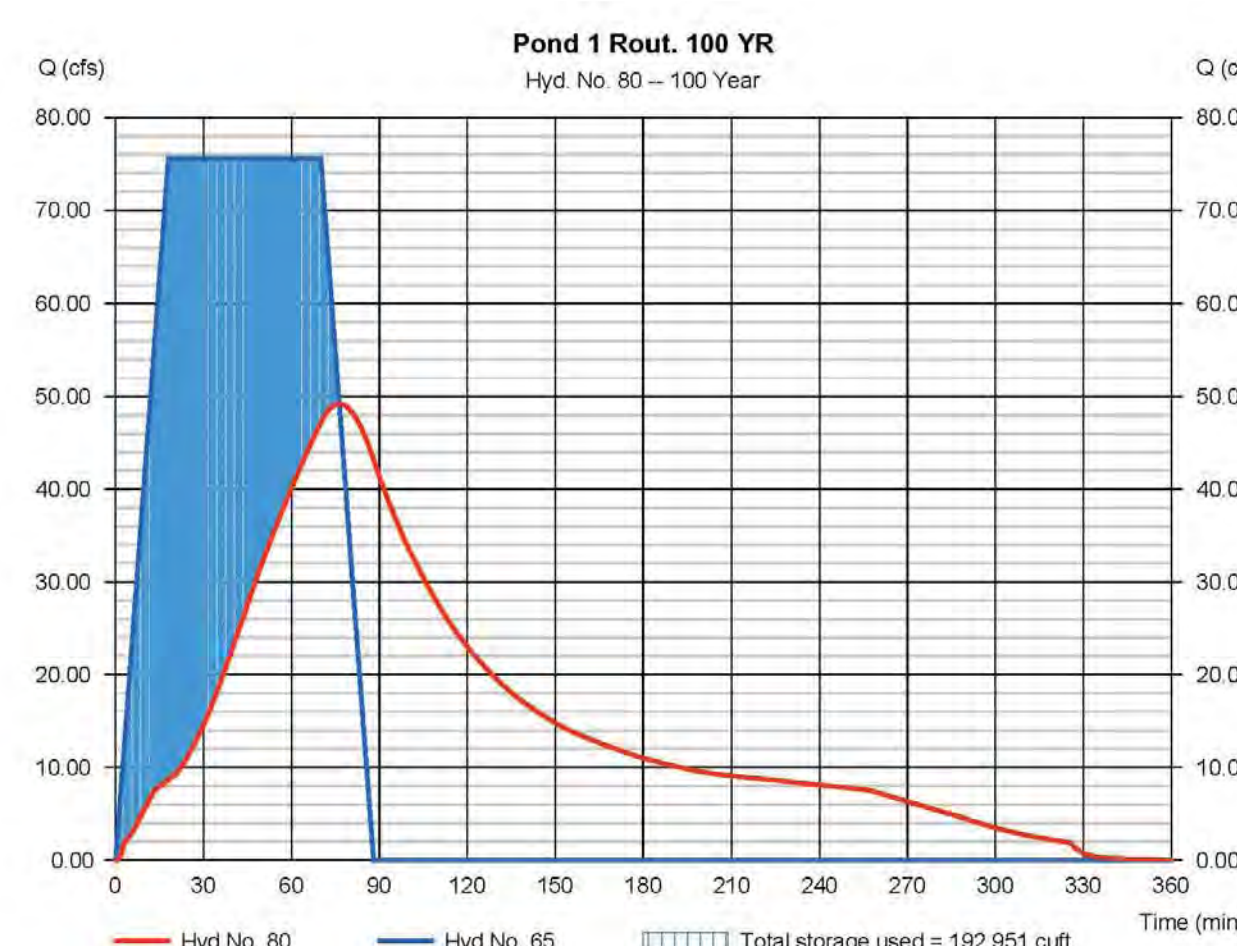
42

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

**Hyd. No. 80**  
Pond 1 Rout. 100 YR

Hydrograph type = Reservoir	Peak discharge = 49.20 cfs
Storm frequency = 100 yrs	Time to peak = 76 min
Time interval = 1 min	Hyd. volume = 317,437 cuft
Inflow hyd. No. = 65 - 2309 Post-Dev A1a 100yr	Max. Elevation = 509.57 ft
Reservoir name = 2309 Pond 1	Max. Storage = 192,951 cuft

Storage indication method used.



### Pond Report

12

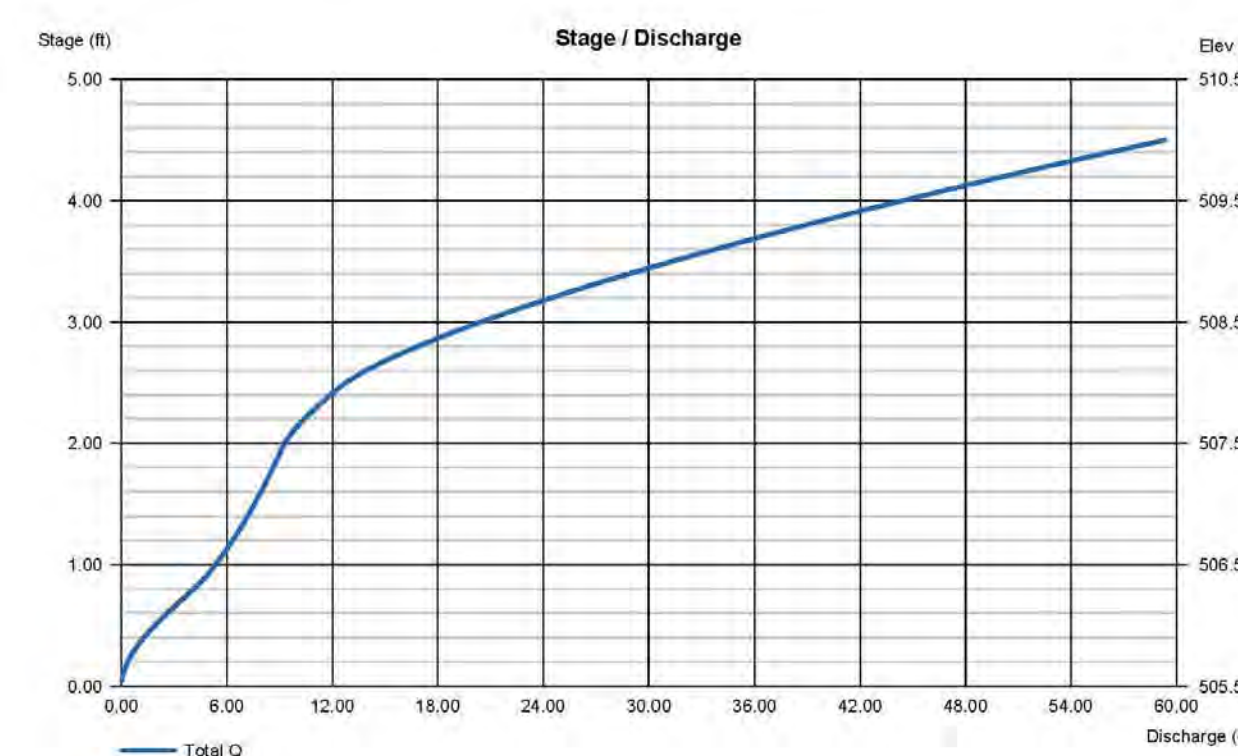
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

**Pond No. 1 - 2309 Pond 1**  
Pond Data  
Contours -User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 505.50 ft

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	505.50	0	0	0
0.50	506.00	4,653	775	775
1.50	507.00	37,222	18,343	18,119
2.50	508.00	89,029	52,308	71,427
3.50	509.00	73,337	71,165	142,592
4.50	510.00	77,778	75,538	218,130

Culvert / Orifice Structures				Weir Structures					
	[A]	[B]	[C] [PrRsr]		[A]	[B]	[C] [D]		
Rise (ft)	= 12.00	0.00	0.00	0.00	Crest Len (ft)	= 1.75	2.25	0.00	0.00
Span (ft)	= 12.00	0.00	0.00	0.00	Crest B. (ft)	= 507.50	508.00	0.00	0.00
No. Barrels	= 2	0	0	0	Weir Coeff.	= 3.33	3.33	3.33	3.33
Invert El. (ft)	= 505.50	0.00	0.00	0.00	Weir Type	= Rect	Rect	Rect	Rect
Length (ft)	= 0.00	0.00	0.00	0.00	Multi-Stage	= No	No	No	No
Slope (%)	= 0.00	0.00	0.00	n/a					
N-Value	= 0.13	0.13	0.13	n/a	Exfil. (in/hr)	= 0.000 (by Wet area)			
Orifice Coeff.	= 0.60	0.60	0.60	0.60	TW Elev. (ft)	= 0.00			
Multi-Stage	= n/a	No	No	No					

Note: Culvert/Orifice structures are analyzed under peak (c) and sublet (cc) control. Weir flows should be verified under peak (c) and sublet (cc) control.



### Pond Report

12

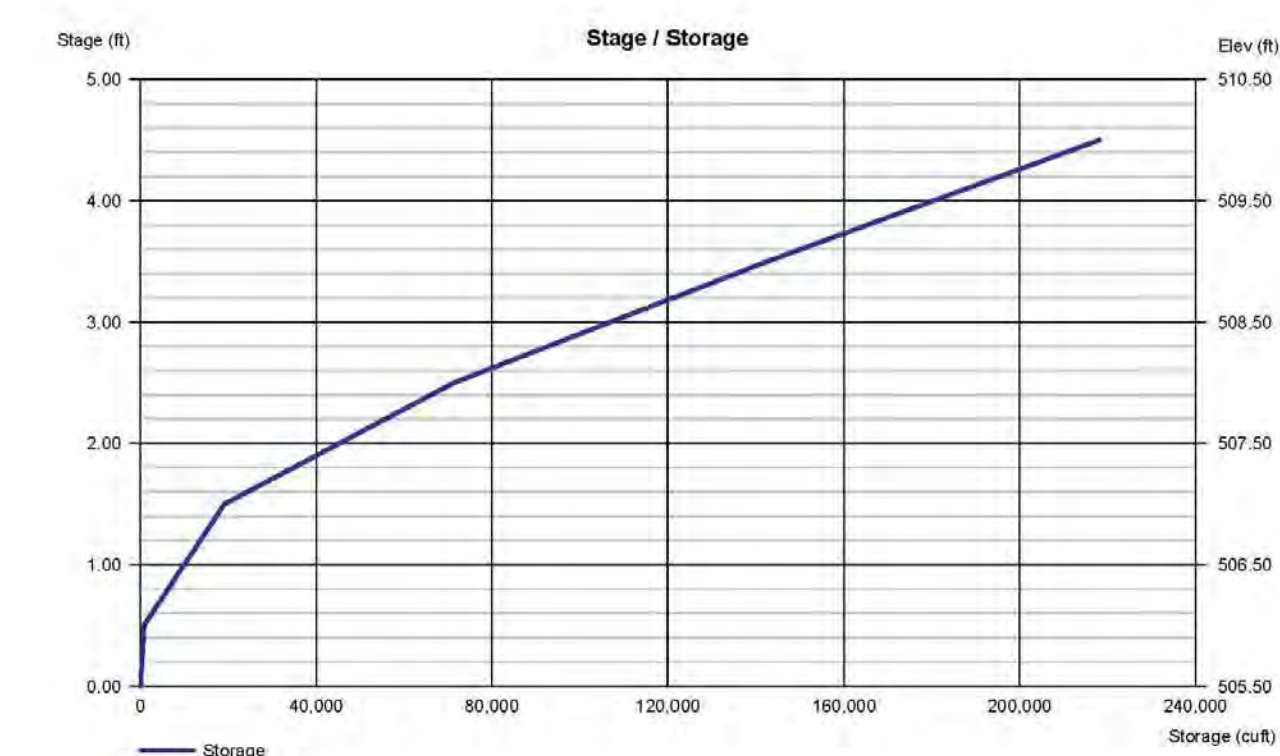
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

**Pond No. 1 - 2309 Pond 1**  
Pond Data  
Contours -User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 505.50 ft

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	505.50	0	0	0
0.50	506.00	4,653	775	775
1.50	507.00	37,222	18,343	18,119
2.50	508.00	89,029	52,308	71,427
3.50	509.00	73,337	71,165	142,592
4.50	510.00	77,778	75,538	218,130

Culvert / Orifice Structures				Weir Structures					
	[A]	[B]	[C] [PrRsr]		[A]	[B]	[C] [D]		
Rise (ft)	= 12.00	0.00	0.00	0.00	Crest Len (ft)	= 1.75	2.25	0.00	0.00
Span (ft)	= 12.00	0.00	0.00	0.00	Crest B. (ft)	= 507.50	508.00	0.00	0.00
No. Barrels	= 2	0	0	0	Weir Coeff.	= 3.33	3.33	3.33	3.33
Invert El. (ft)	= 505.50	0.00	0.00	0.00	Weir Type	= Rect	Rect	Rect	Rect
Length (ft)	= 0.00	0.00	0.00	0.00	Multi-Stage	= No	No	No	No
Slope (%)	= 0.00	0.00	0.00	n/a					
N-Value	= 0.13	0.13	0.13	n/a	Exfil. (in/hr)	= 0.000 (by Wet area)			
Orifice Coeff.	= 0.60	0.60	0.60	0.60	TW Elev. (ft)	= 0.00			
Multi-Stage	= n/a	No	No	No					

Note: Culvert/Orifice structures are analyzed under peak (c) and sublet (cc) control. Weir flows should be verified under peak (c) and sublet (cc) control.



## 1 DETENTION POND 1 DRAINAGE CALCULATIONS



### COTTON BOTTOM ESTATES NEW RESIDENTIAL DEVELOPMENT

TEMPLE ETJ,  
BELL COUNTY, TEXAS

### DETENTION POND DRAINAGE CALCULATIONS - SHEET 1

#### DRAWING STATUS

THESE DRAWINGS WERE PREPARED UNDER THE AUTHORITY OF MONTY L. CLARK, P.E. 90894, CLARK ASSOCIATES PLLC FIRM NO. F-23184.

FOR REVIEW  
THIS DOCUMENT IS RELEASED FOR THE PURPOSES OF INTERIM REVIEW ONLY AS PER DATE ON DRAWING. IT IS NOT TO BE USED FOR BIDDING OR CONSTRUCTION PURPOSES. ONLY DRAWINGS ISSUED "FOR CONSTRUCTION" CAN BE CONSIDERED COMPLETE.

FOR CONSTRUCTION  
FINAL DRAWINGS

Designed	MLC
Drafted	PRA
Project No	212309.00
Plot Date	4-1-2022
<b>15</b>	



### Hydrograph Report

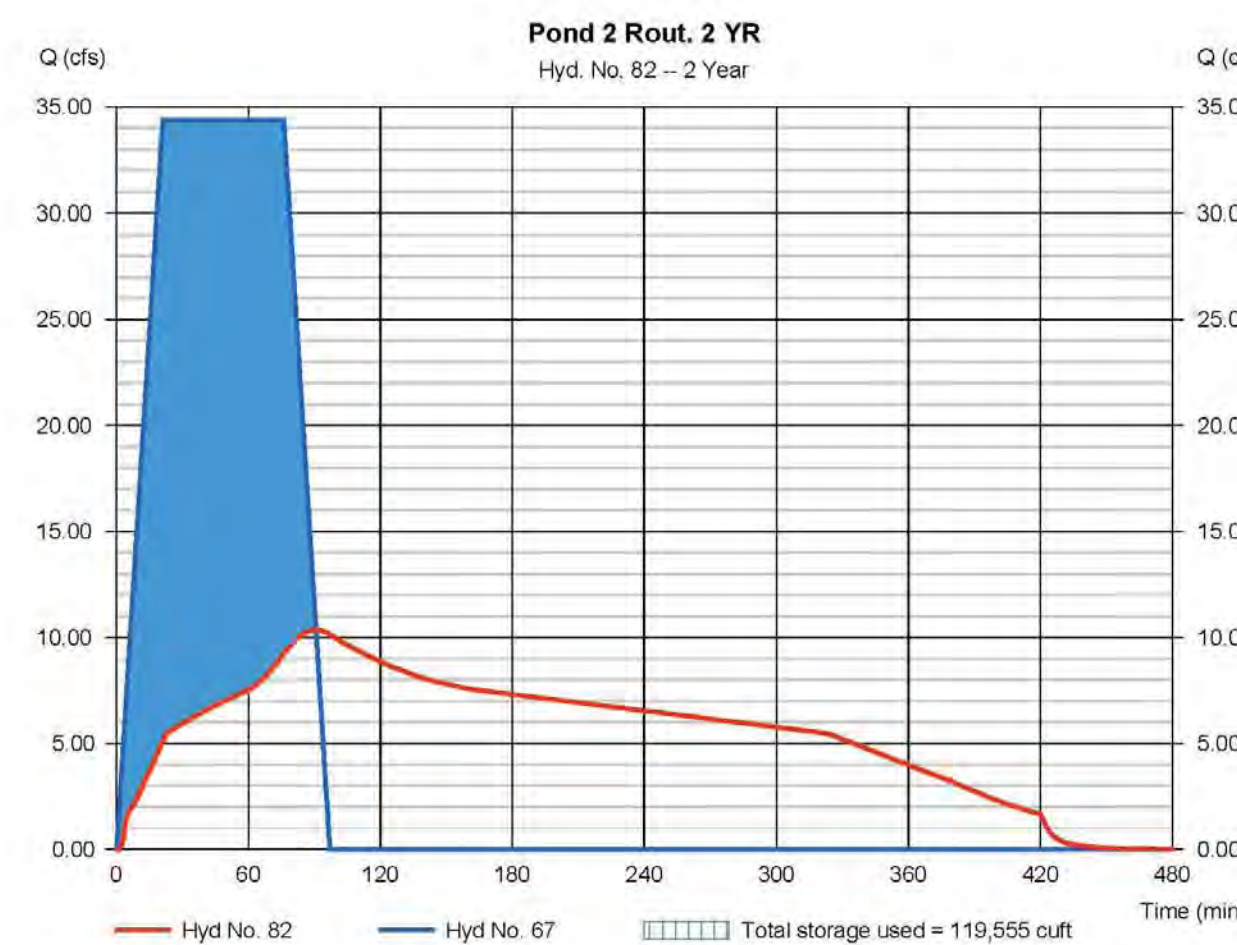
1

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

**Hyd. No. 82**  
Pond 2 Rout. 2 YR

Hydrograph type = Reservoir	Peak discharge = 10.34 cfs
Storm frequency = 2 yrs	Time to peak = 91 min
Time interval = 1 min	Hyd. volume = 156,776 cuft
Inflow hyd. No. = 67 - 2309 Post-Dev A2a 2yr	Max. Elevation = 507.37 ft
Reservoir name = 2309 Pond 2	Max. Storage = 119,555 cuft

Storage indication method used.



### Hydrograph Report

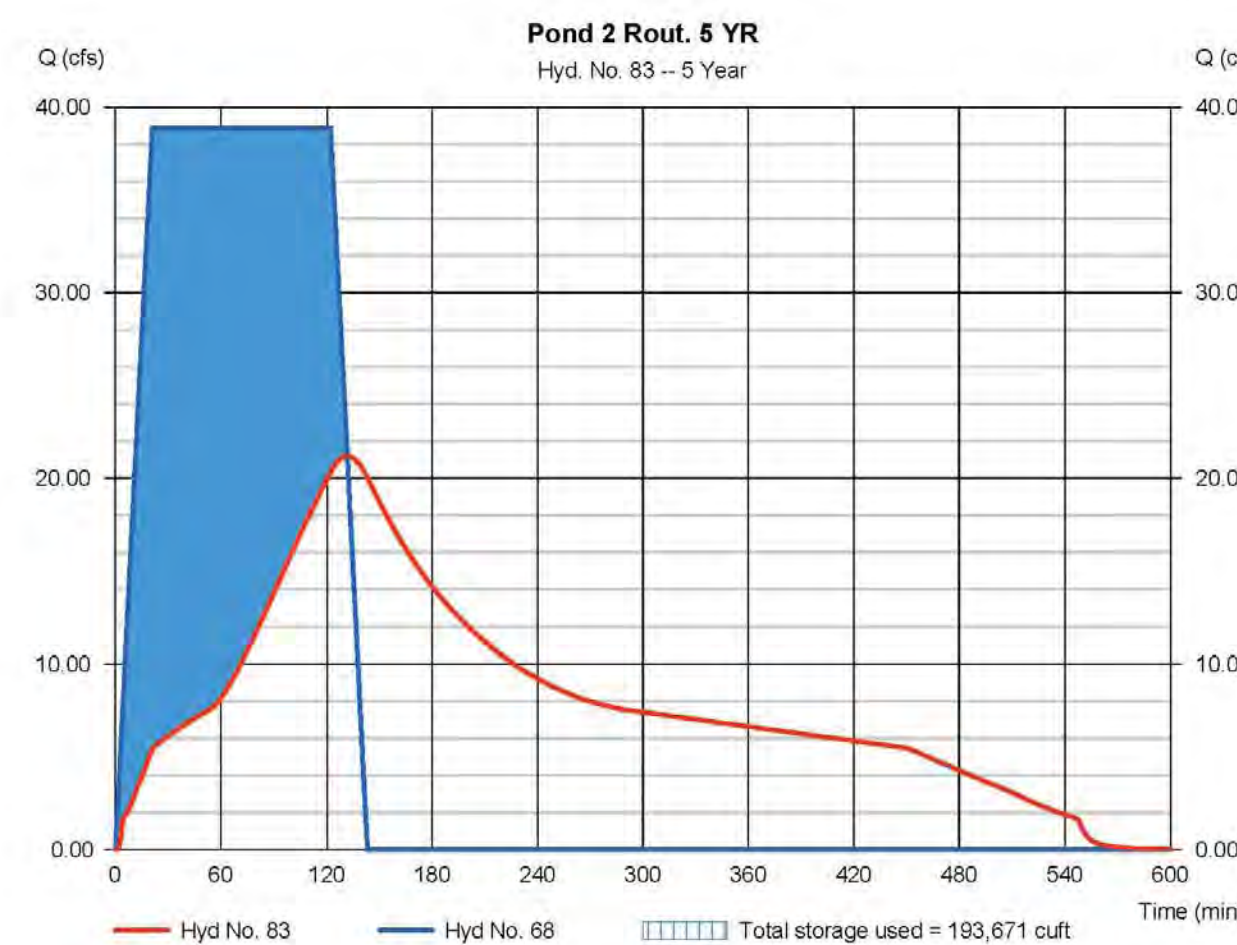
14

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

**Hyd. No. 83**  
Pond 2 Rout. 5 YR

Hydrograph type = Reservoir	Peak discharge = 21.17 cfs
Storm frequency = 5 yrs	Time to peak = 132 min
Time interval = 1 min	Hyd. volume = 284,564 cuft
Inflow hyd. No. = 68 - 2309 Post-Dev A2a 5yr	Max. Elevation = 508.16 ft
Reservoir name = 2309 Pond 2	Max. Storage = 193,671 cuft

Storage indication method used.



### Hydrograph Report

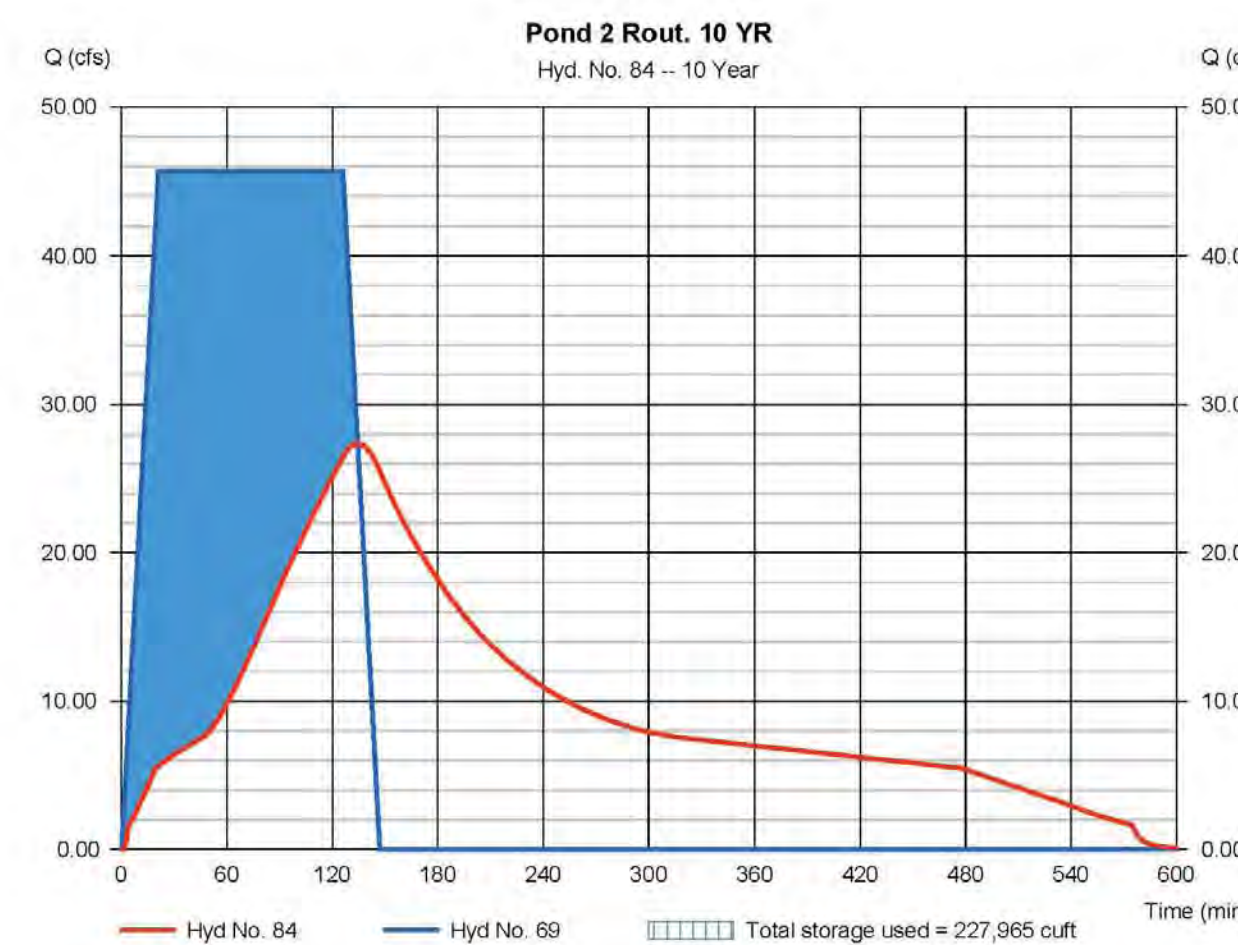
21

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

**Hyd. No. 84**  
Pond 2 Rout. 10 YR

Hydrograph type = Reservoir	Peak discharge = 27.34 cfs
Storm frequency = 10 yrs	Time to peak = 134 min
Time interval = 1 min	Hyd. volume = 345,427 cuft
Inflow hyd. No. = 69 - 2309 Post-Dev A2a 10yr	Max. Elevation = 508.51 ft
Reservoir name = 2309 Pond 2	Max. Storage = 227,965 cuft

Storage indication method used.



### Hydrograph Report

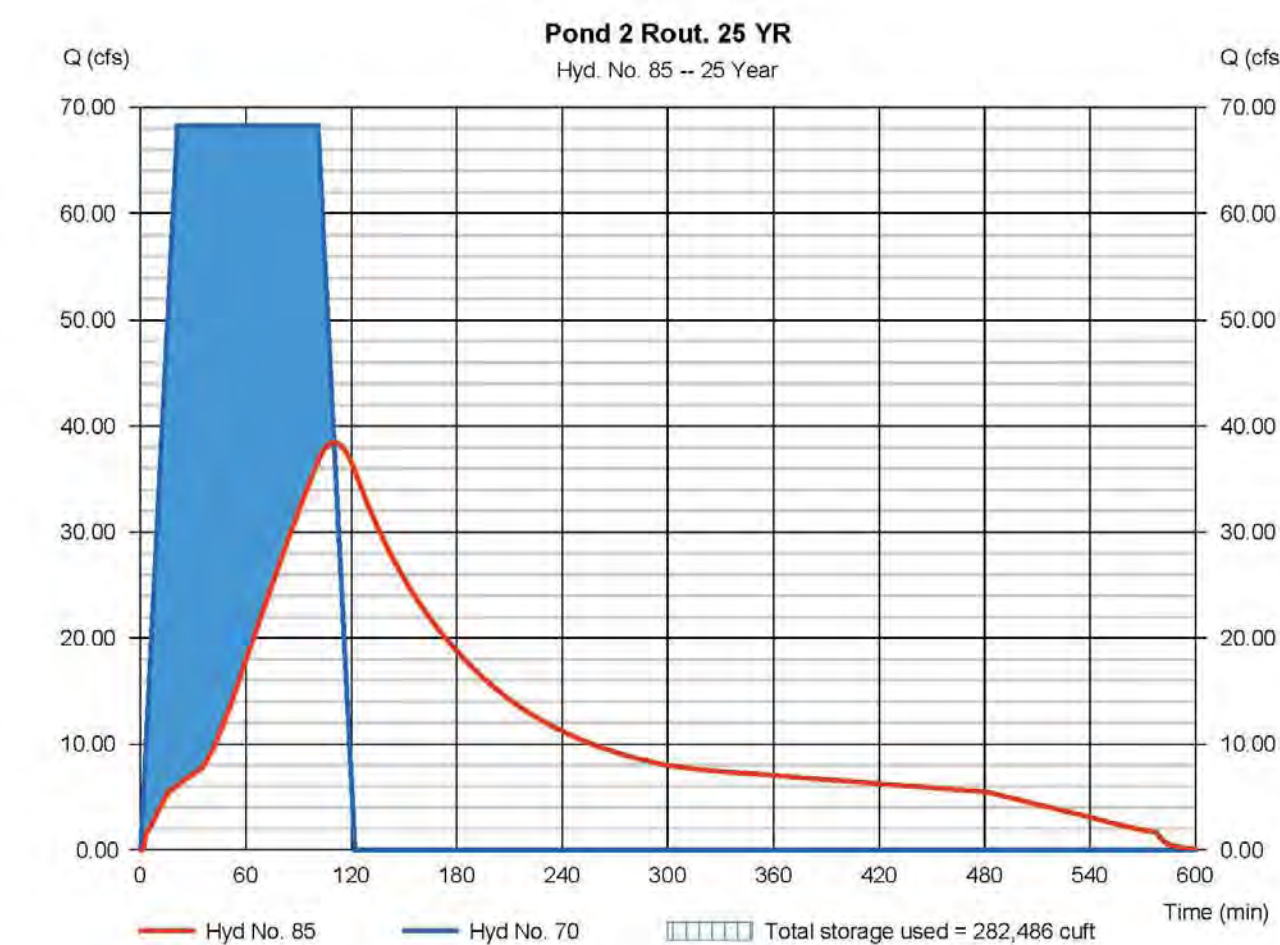
28

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

**Hyd. No. 85**  
Pond 2 Rout. 25 YR

Hydrograph type = Reservoir	Peak discharge = 38.45 cfs
Storm frequency = 25 yrs	Time to peak = 110 min
Time interval = 1 min	Hyd. volume = 413,546 cuft
Inflow hyd. No. = 70 - 2309 Post-Dev A2a 25yr	Max. Elevation = 509.07 ft
Reservoir name = 2309 Pond 2	Max. Storage = 282,486 cuft

Storage indication method used.



### Hydrograph Report

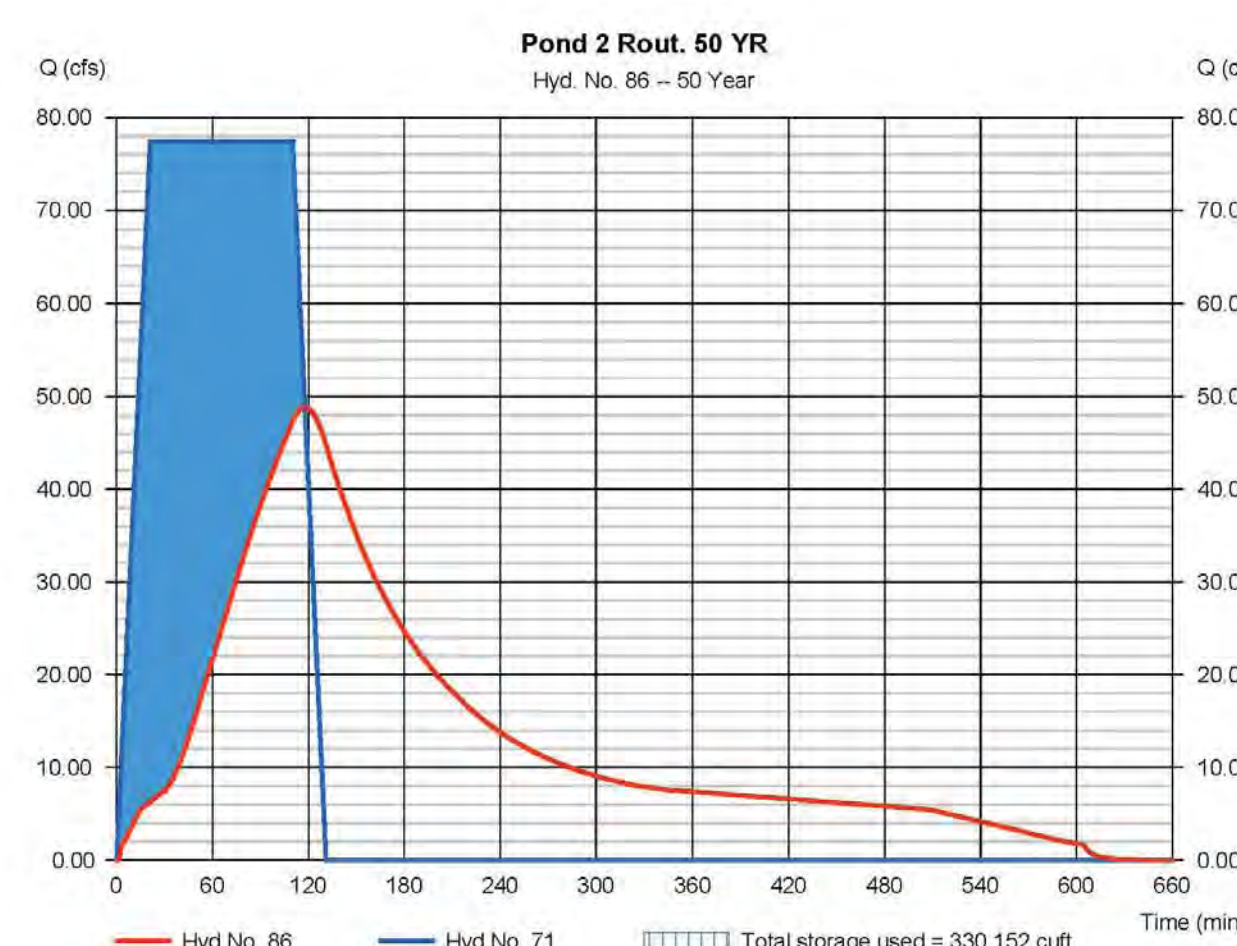
35

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

**Hyd. No. 86**  
Pond 2 Rout. 50 YR

Hydrograph type = Reservoir	Peak discharge = 48.85 cfs
Storm frequency = 50 yrs	Time to peak = 118 min
Time interval = 1 min	Hyd. volume = 511,017 cuft
Inflow hyd. No. = 71 - 2309 Post-Dev A2a 50yr	Max. Elevation = 509.53 ft
Reservoir name = 2309 Pond 2	Max. Storage = 330,152 cuft

Storage indication method used.



### Hydrograph Report

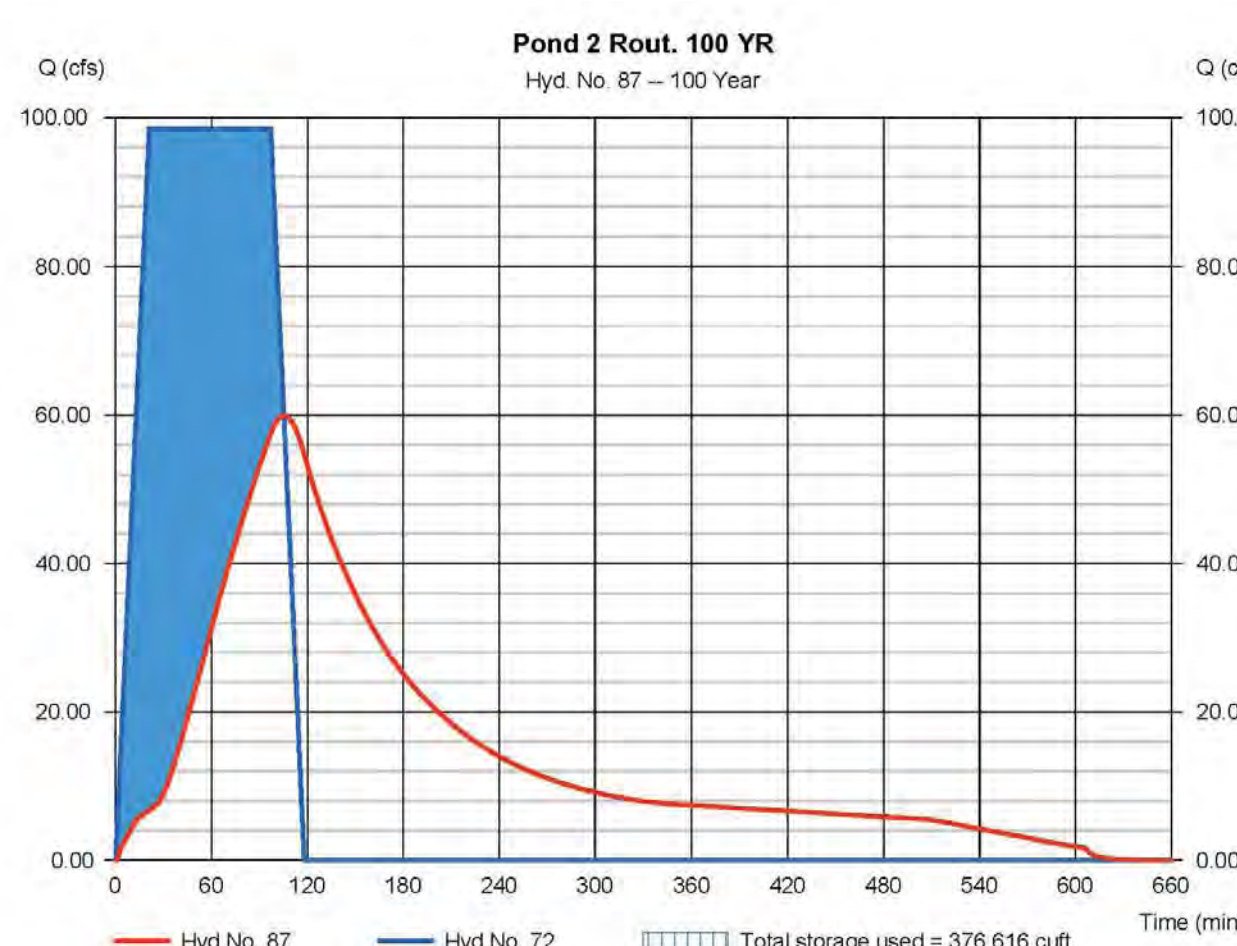
42

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

**Hyd. No. 87**  
Pond 2 Rout. 100 YR

Hydrograph type = Reservoir	Peak discharge = 59.88 cfs
Storm frequency = 100 yrs	Time to peak = 105 min
Time interval = 1 min	Hyd. volume = 573,055 cuft
Inflow hyd. No. = 72 - 2309 Post-Dev A2a 100yr	Max. Elevation = 509.96 ft
Reservoir name = 2309 Pond 2	Max. Storage = 376,616 cuft

Storage indication method used.



### Pond Report

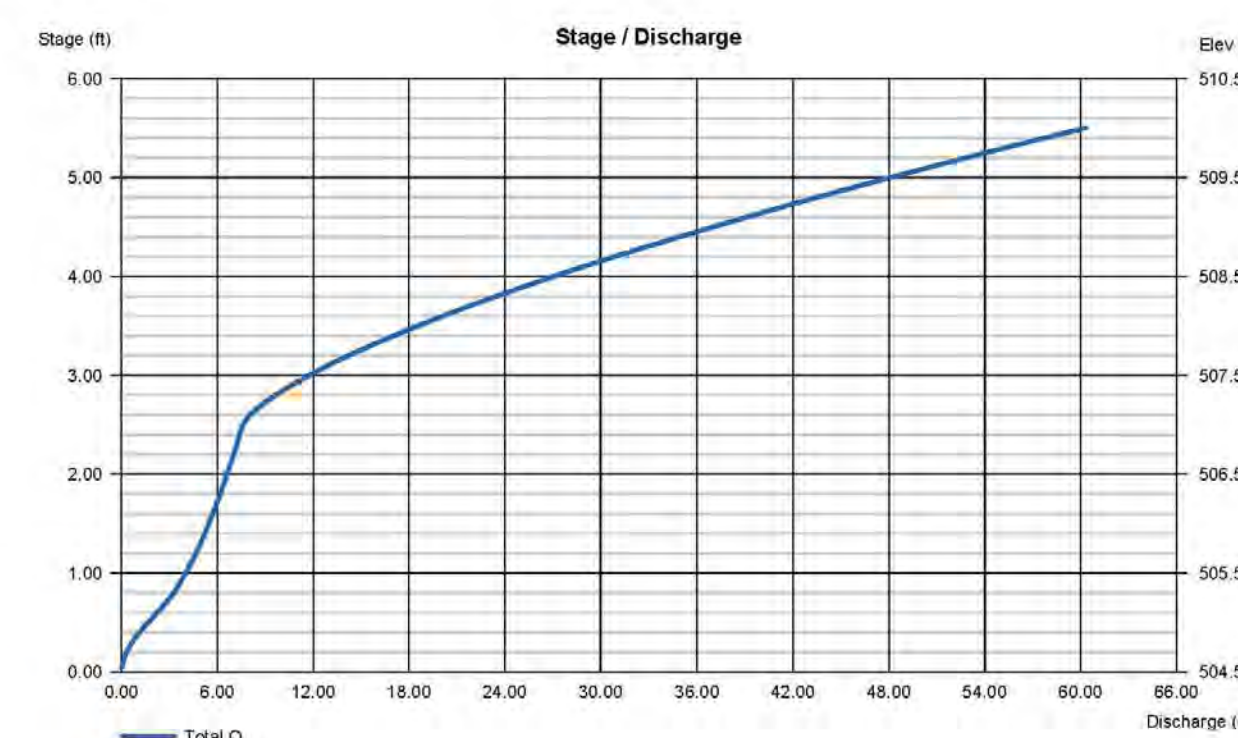
12

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

**Pond No. 3 - 2309 Pond 2**  
Pond Data  
Contours - User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 504.50 ft

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	504.50	0	0	0
0.50	505.00	4,831	822	822
1.50	506.00	41,769	20,353	21,174
2.50	507.00	89,533	64,152	85,328
3.50	508.00	85,219	92,362	177,678
4.50	509.00	100,303	87,740	275,419
5.50	510.00	105,517	102,888	378,307

Culvert / Orifice Structures				Weir Structures			
[A]	[B]	[C]	[P/r/Rs]	[A]	[B]	[C]	[D]
Rise (in)	= 10.00	0.00	0.00	Crest Len (ft)	= 2.80	Inactive	0.00
Span (in)	= 10.00	0.00	0.00	Crest Bt. (ft)	= 507.00	508.50	0.00
No. Barrels	= 2	0	0	Weir Coeff.	= 3.33	3.33	3.33
Invert El. (ft)	= 504.50	0.00	0.00	Weir Type	= Rect	Rect	—
Length (ft)	= 0.00	0.00	0.00	Multi-Stage	= No	No	No
Slope (%)	= 0.00	0.00	n/a				
N-Value	= .013	.013	.013	Exit Elev. (ft)	= 0.000	(By Weir area)	
Orifice Coeff.	= 0.60	0.60	0.60	TW Elev. (ft)	= 0.00		
Multi-Stage	= n/a	No	No				



### Pond Report

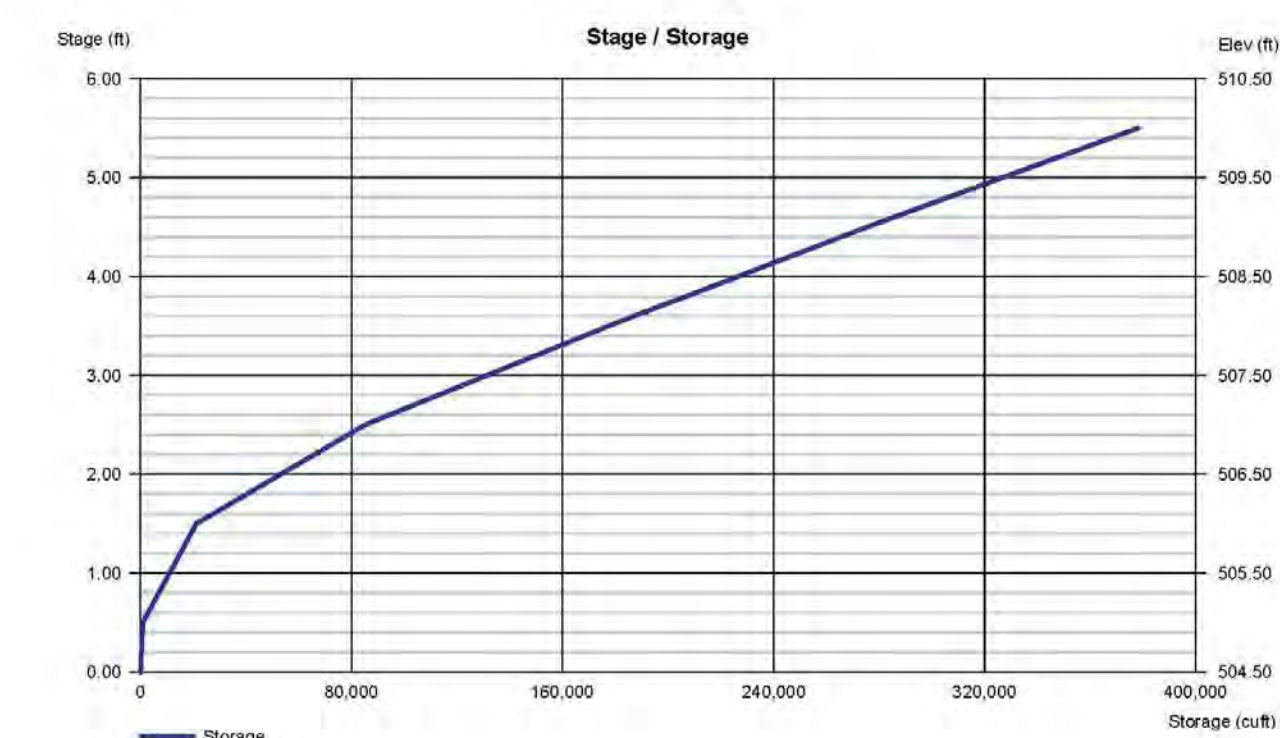
12

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 04/11/2022

**Pond No. 3 - 2309 Pond 2**  
Pond Data  
Contours - User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 504.50 ft

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	504.50	0	0	0
0.50	505.00	4,831	822	822
1.50	506.00	41,769	20,353	21,174
2.50	507.00	89,533	64,152	85,328
3.50	508.00	85,219	92,362	177,678
4.50	509.00	100,303	87,740	275,419
5.50	510.00	105,517	102,888	378,307

Culvert / Orifice Structures				Weir Structures			
[A]	[B]	[C]	[P/r/Rs]	[A]	[B]	[C]	[D]
Rise (in)	= 10.00	0.00	0.00	Crest Len (ft)	= 2.80	Inactive	0.00
Span (in)	= 10.00	0.00	0.00	Crest Bt. (ft)	= 507.00	508.50	0.00
No. Barrels	= 2	0	0	Weir Coeff.	= 3.33	3.33	3.33
Invert El. (ft)	= 504.50	0.00	0.00	Weir Type	= Rect	Rect	—
Length (ft)	= 0.00	0.00	0.00	Multi-Stage	= No	No	No
Slope (%)	= 0.00	0.00	n/a				
N-Value	= .013	.013	.013	Exit Elev. (ft)	= 0.000	(By Weir area)	
Orifice Coeff.	= 0.60	0.60	0.60	TW Elev. (ft)	= 0.00		
Multi-Stage	= n/a	No	No				



## 2 DETENTION POND 2 DRAINAGE CALCULATIONS



**COTTON BOTTOM ESTATES**  
NEW RESIDENTIAL DEVELOPMENT

TEMPLE ETJ,  
BELL COUNTY, TEXAS

**DETENTION POND DRAINAGE CALCULATIONS - SHEET 2**

**DRAWING STATUS**

THESE DRAWINGS WERE PREPARED UNDER THE AUTHORITY OF MONTY L. CLARK, P.E. 90894, CLARK ASSOCIATES PLLC FIRM NO.: F-23184.

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FOR CONSTRUCTION  
 FINAL DRAWINGS

Designed	MLC
Drafted	PRA
Project No.	212309.00
Plot Date	4-1-2022

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